SEPTEMBER 15, 1952

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

OHIO STATE UNIVERSITY
SEP 15 1952
LIBRARY

WHAT CAN INDUSTRY EXPECT?

BOX SCORE: Where the candidates stand on business issues, page 74

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ROLL GROOVING TIME SLASHED
Gang Tools Do the Trick, p. 106

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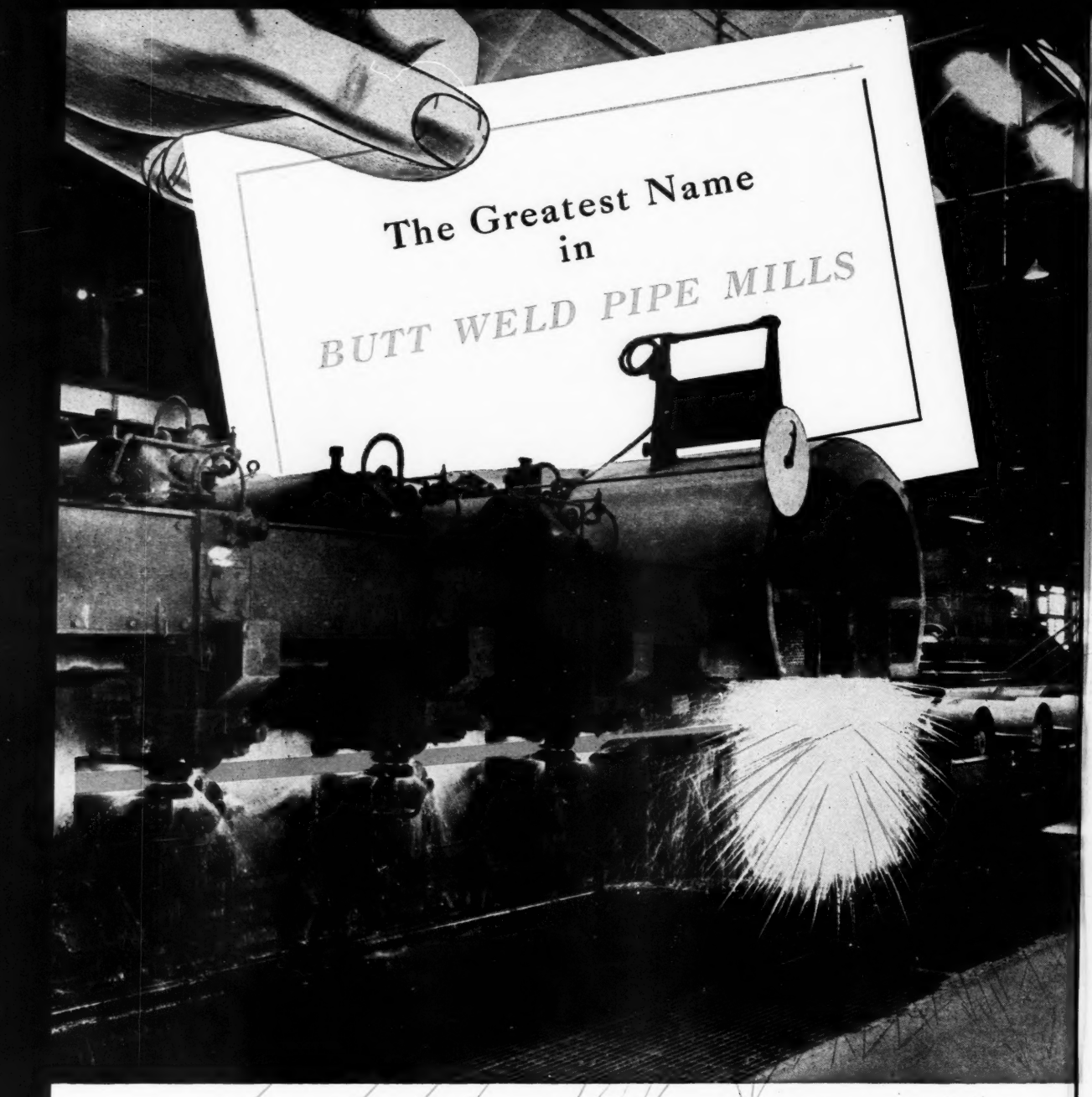


Aetna-Standard

THE AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

Plants in Warren, Ohio · Ellwood City, Pennsylvania

ASSOCIATED COMPANIES

Head Wrightson Machine Company, Ltd., Middlesbrough, England—Great Britain, Finland, Sweden, Norway, Denmark, Union of South Africa, Northern and Southern Rhodesia.

Aetna-Standard Engineering Company, Ltd., Toronto, Ontario, Canada.

M. Castellvi, Inc., New York, N. Y.—Mexico, Central and South America.

Societe de Constructions de Montbard, Paris, France—France, Belgium, Holland, Luxembourg, Switzerland.

Demag Aktiengesellschaft, Duisburg, Germany—Germany, Austria, Yugoslavia, Greece, Turkey, Egypt.

Compagnia Italiana Forme Acciaio, Milano, Italy—Italy.

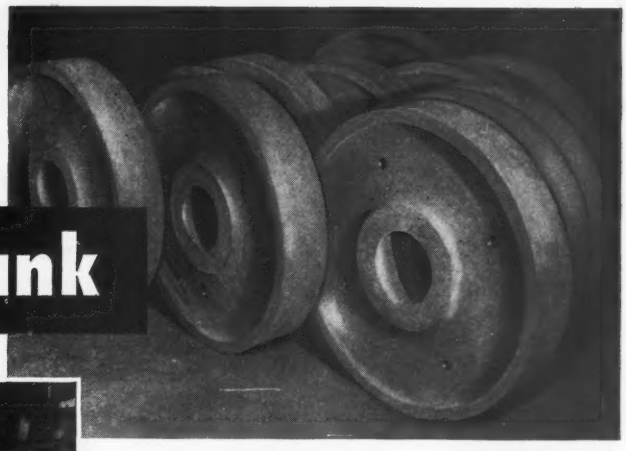
Aetna-Japan Company, Ltd., Tokyo, Japan—Japan.

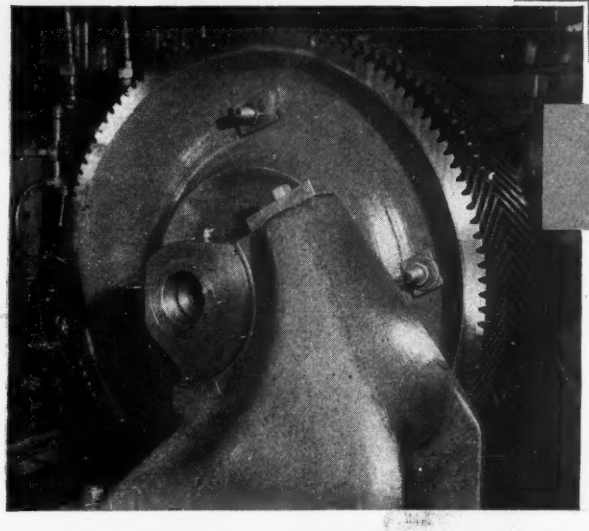
Hale & Kullgren, Inc., Akron, Ohio—Representative for the Rubber Industry.

Designers and Builders to the Ferrous, Non-Ferrous, Leather and Rubber Industries

Good Steel

Good Blank





Good Gear

No gear is any better than the blank from which it's made. If you start with a blank that's sturdy from rim to hub, one that contains high-quality steel, many production problems are licked at the outset.

Bethlehem blanks have everything you need in the making of a good, tough gear. These heavy-duty products are of clean, sound steel of uniform density.

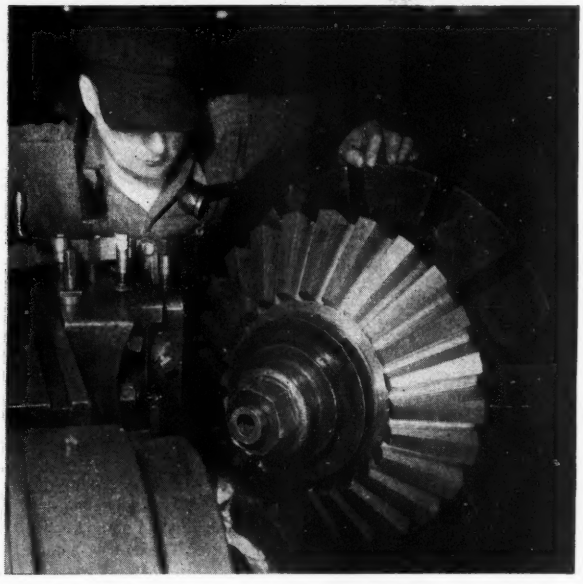
The blanks are not just rolled, not just forged, but *both*. Rolling and forging are combined in a single operation—one that shapes the hot blocks of steel and helps make the metal compact and homogeneous.

Blanks so processed are very strong; in fact, this advantage often makes possible the use of lighter sections. Another thing—the grain structure is excellent. That's a point your machinist will appreciate. Whether his cut is shallow or deep, he'll find the going easy. No hidden trouble down beneath.

Try some of these highly-dependable blanks when making spur, bevel, miter, and other types of gears. They are furnished untreated or heat-treated, in sizes ranging from 10 to 42 in. OD.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



BETHLEHEM STEEL

BETHLEHEM ROLLED-AND-FORGED CIRCULAR PRODUCTS

Here's an eight year old story we can tell NOW!

SAVED (IN 1944)

36,000,000 Pounds of Steel

* * *

1,296,000 Dollars

with TOCCO* Induction Heating

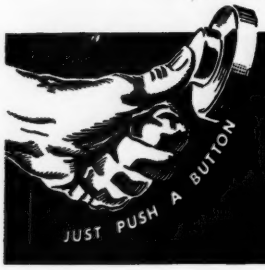
● In 1944 the Army Chemical Corps called for 24 million bomb noses of a certain type. Current techniques required 84 million pounds of steel and more automatic screw machines than could possibly be made available.

● Edgewood Arsenal, given the task of solving this vital production puzzle, abandoned conventional machining methods and employed a hot extrusion process—using TOCCO Induction Heating to bring 2 pound steel blanks to forging heat. *Former methods required 3½ pound blanks to produce the same bomb noses.*

60 KW, 10,000 cycle TOCCO machine heating steel blanks for extrusion into bomb noses.

● In addition to vast savings in steel and money, the new shells had superior fragmentation properties. But above all the 1944 schedule was met —*enough and on time* to strike a telling blow for victory in World War II.

THE OHIO CRANKSHAFT COMPANY • CLEVELAND 1, OHIO



TOCCO

Induction Heating Equipment must meet the requirements of the Federal Communication Commission's Rules and Regulations Relating to Industrial, Scientific and Medical Services, Part 18. All TOCCO equipment is certified to comply with these rules and regulations.

"Irreplaceable You"

Protect hard-to-replace Metal Equipment with

INSUL-MASTIC

Protective Coatings

You can help the scrap drive by collecting scrap, but not by *creating* it. So keep acids, alkalis and moisture from making scrap of your metal vessels and equipment . . . Coat them with INSUL-MASTIC *superior* coatings.

INSUL-MASTIC is the original Gilsonite coating. The one which proved the great resistance of Gilsonite to chemical attack. INSUL-MASTIC's binder contains 50% of this nearly inert mineral. Other coatings contain about 5% . . . or just enough to mention.

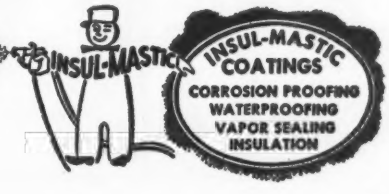
This is only one of the marks of *superior* quality which has made INSUL-MASTIC the leader among coatings. The very high percentage of mica flake is another one. Mica flake helps to give INSUL-MASTIC *superior* coatings their exceptionally long life. And when you specify a coating, you want *long life.*

Another quality of INSUL-MASTIC is homogenization. This prevents the Gilsonite, mica and other ingredients from separating. When we spray INSUL-MASTIC you can be sure that no filler has settled to the bottom of the drum. We apply what you specify.

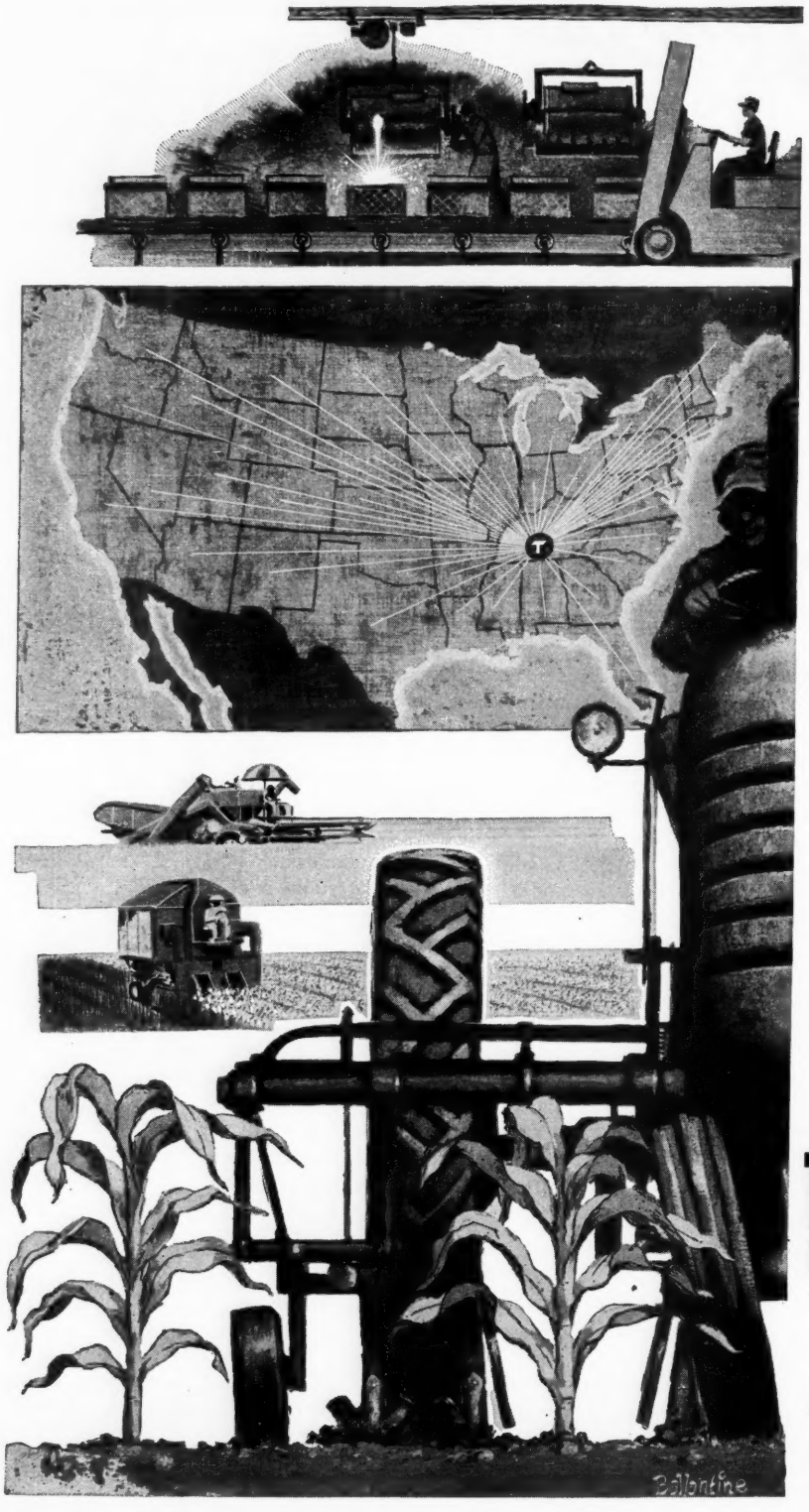
When writing your coating specifications remember it will pay you to give utmost protection to your vessels and equipment by choosing the leader among coatings. Specify INSUL-MASTIC by name.

Think first of the coatings that last!

Insul-Mastic Corporation
OF AMERICA
1166 OLIVER BUILDING · PITTSBURGH 22, PA.
Representatives in Principal Cities



THERE'S A TOUCH OF TENNESSEE IN ILLINOIS FARM MACHINERY



In the cotton fields of the South, in the corn fields of the Middle West, in the wheat fields of the Great Plains and the Great Northwest, in agricultural operations the world over, Farm Machinery from Illinois is used.

TENNESSEE supplies ferro alloys and pig iron for the steel and castings that build these machines, solvents for the paints and lacquers that protect them as well as many other chemical and metallurgical materials that help make Illinois Farm Machinery.

Manufacturers across the nation shipping their finished products around the world look to TENNESSEE for many items essential to their production. That's why TENNESSEE is known from Coast to Coast as an industry serving all industry.

TENNESSEE
PRODUCTS & CHEMICAL
Corporation
NASHVILLE, TENNESSEE

Producers of: **FUELS • METALLURGICAL PRODUCTS • TENSULATE BUILDING PRODUCTS • AROMATIC CHEMICALS WOOD CHEMICALS • AGRICULTURAL CHEMICALS**

This Week in Metalworking

STEEL

Vol. 131 No. 11 · Sept. 15, 1952

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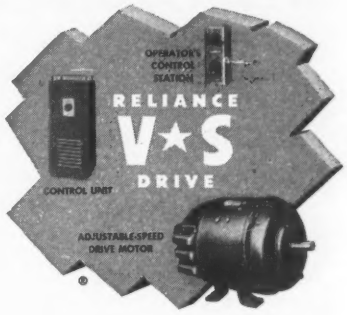
STEP UP PRODUCTION OF SMALL MACHINERY, TOO

... with the All-electric Adjustable-speed V★S Drive

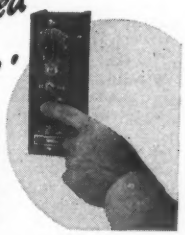


Reliance V★S Drive, 3/4 to 3 horsepower, has proved especially profitable in the operation of small machines. Write for Bulletin D-2101. For detailed information about larger V★S Drives to 300 horsepower, specify Bulletin D-2311.

- ✓ WIDE SPEED RANGES
- ✓ SMOOTH STARTING
- ✓ QUICK STOPPING
- ✓ JOGGING, INCHING, CREEPING
- ✓ FAST, SMOOTH REVERSING

and

Convenient Centralized Control...



Reliance V★S Drive features convenient-to-operate controls grouped and located where your operator can quickly, easily and safely control all functions of his machine.

Sales Representatives in Principal Cities

RELIANCE ELECTRIC AND ENGINEERING CO.

1081 Ivanhoe Road • Cleveland 10, Ohio

"Motor-Drive is More Than Power"

Print up to 2000 feet per minute with the NEW Pannier AUTOMATIC SHEET and STRIP "Master Marker" ...make complete die change in 30 seconds!

Pannier Engineers, through constant research and experimentation, have successfully developed a marking device for efficiently and automatically printing sheets and strip made from any kind of material.

CHECK THESE MONEY-SAVING ADVANTAGES:

- Prints all materials—any thickness.
- Driven by product or conveyor at production-line speed—up to 2000 feet per minute with safety. (Wheel need not ride on product.)
- Complete brass-back die held by spring pin—quickly and easily changed.
- Interchangeable Dovetail National Type for heat numbers, etc.
- One or two dies—any spacing required.
- Felt ink roll with enclosed bearings—inked from face—adjustable to die thickness.
- Adjustable-set-screw-collar crossbar mounting.
- Adjustable die pressure—remains constant despite product irregularities.
- Full counterweight on drive wheel axle for perfect balance.
- Friction drive, Alemite-lubricated-roller-bearing wheel with 30-35,000-mile-life rubber tire.
- Fully guaranteed. *Pat applied for

Write for FREE Bulletin

OFFICES: Chicago, Ill. • Los Angeles, Calif. Jacksonville, Fla. • Youngstown, Ohio Philadelphia, Pa.

EXPORT DEPT.: Bessemer Bldg., Pittsburgh, Pa.

The Pannier Corporation
220 PANNIER BUILDING
Pittsburgh 12, Pa.

Behind the Scenes...

E Pluribus Unum

We've often wondered about you, the reader of STEEL. Now, thanks to our promotion department, we've got the answers. It conducted a survey and out of the results comes a good picture of Mr. STEEL Reader. Here it is.

Mr. R. is a 45-year-old man with touches of grey. He sometimes stops to contemplate a receding hairline. He's been with his present company some 15 years and has held his present job for eight of the 15.

His title is president, vice president, purchasing agent or chief engineer. He also could be one of more than 50 other management, production, engineering or purchasing executives.

He's part of a management team and his plant employs more than 500 individuals. Mr. R. himself supervises 59 employees. His advice or recommendations are sought before new equipment or materials are purchased. He often initiates new and improved manufacturing methods, takes part in personnel training, specifies new equipment or materials, buys or places orders. In many cases he handles company finances and works out company public relations programs.

He's a high school or college grad. If he's a college graduate, his degree is in mechanical engineering, although a lot of his co-readers are also electrical and metallurgical engineers. Mr. R. has also taken some special training courses and is very interested in correspondence and post graduate courses. He belongs to various professional societies, his favorite being the American Society for Metals.

One of Mr. R.'s choicest jobs is attending trade shows. His favorite is the American Metal Congress with the Tool Engineers Show and Materials Handling Show next most popular.

Salesmen continually seek an audience with Mr. R. Often they can see him by request only—that shows he's a busy and important man.

Mr. R. concentrates 62 per cent of his reading time on only four publications. The rest of that time is given to 35 other business publications.

Mr. R. earns $12,700 per year. He owns his own home, and at today's prices the house is valued at $22,500. In his spare time he's a great golfer, usually showing more enthusiasm than talent. He also likes to fish and regards himself somewhat of an authority on proper use of lures.

He uses his mechanical ability around the house and is something more than just a putterer. He also is a great huntsman.

Cover Story

This week's cover story is by Mrs. Elizabeth Oswald, one of STEEL's Washington editors. Although Mrs. Oswald is new to the staff of STEEL, she is no stranger either to reporting or to the Washington whirlpool.

A little east of here she turns on her knowledge of politicking and without pausing to give odds on the presidential race, paints a convincing and logical picture of the industrial atmosphere we'd work in with a Republican and then with a Democratic victor.

Television Facts

We've just discovered that a survey in the Washington area by Meck Television Inc., reveals people who don't own a set see almost as many programs as those who do. Answers showed set owners average 16½ hours per week and nonowners average 12 hours per week. We wonder if the ratio would be the same with respect to bathtubs.

Puzzle Corner

As has been pointed out to us the answer to the August 18th puzzle is: Gold 30.5 oz. and not 3.5 as we misprinted it. Right answer to the puzzle in the issue of Sept. 1 is: You are 21 and I am 28 years old. First in with that sticker were: R. E. Kreider, Frantz Mfg. Co.; Mary Hermiller, Sylvania Electric Prod. Inc.; L. D. Rice, Timken Roller Bearing Co. and Ralph Pappenheimer, Specialty Device Co.

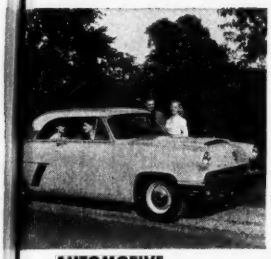
Here's the one for this week. By selling a clock for $24, a jeweler made a profit of as many per cent of the cost as the number of dollars the clock cost. What was the cost of the clock?

Shrdlu

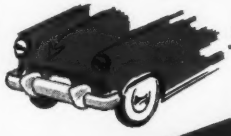
(Metalworking Outlook—Page 55)

low-

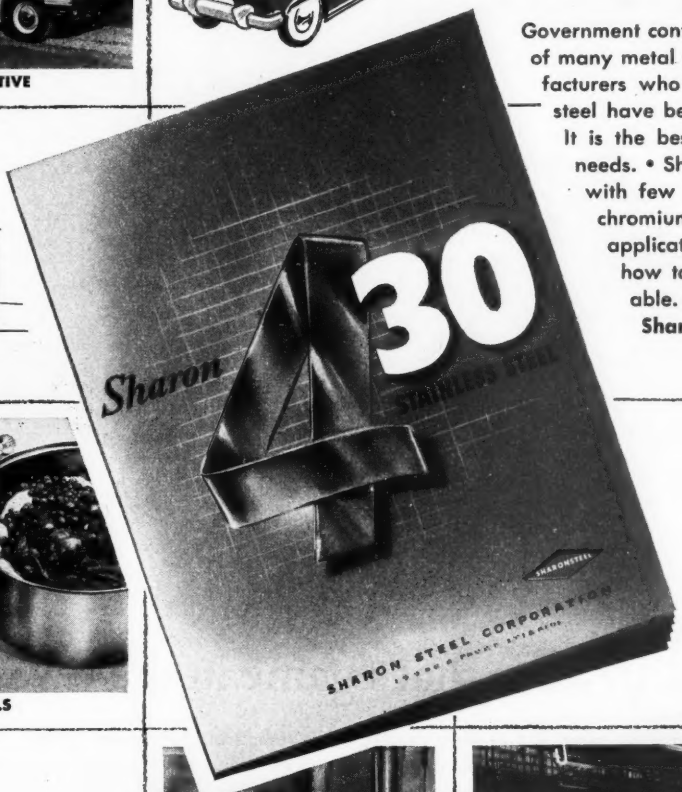
facts about 430 Stainless Steel for manufacturers concerned about critical materials

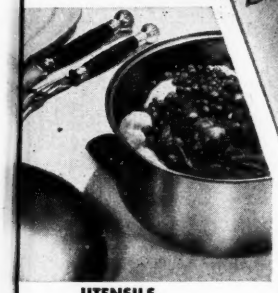


AUTOMOTIVE



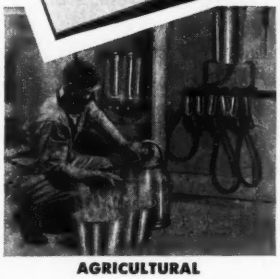
Government controls are pinching the raw material supplies of many metal fabricators. However, many of these manufacturers who are familiar with Sharon "430" stainless steel have been able to quickly adapt it to their needs. It is the best available material for many of today's needs. • Sharon "430" is in good supply and available with few restrictions as to end use. It is a straight chromium stainless steel with hundreds of successful applications. A new booklet with instructions on how to fabricate Sharon "430" stainless is available. Get your copy by writing department 895 **Sharon Steel Corporation, Sharon, Pa.**



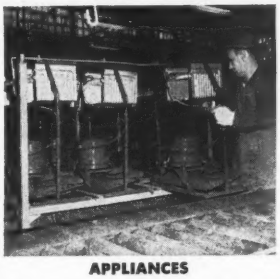


UTENSILS

SPECIAL



AGRICULTURAL



APPLIANCES

ARCHITECTURAL

Sharon 430 stainless steel

SHARONSTEEL

...*when you LEAD them*, that's game in the BAG

You have to shoot *ahead* of fast-moving game, if you want to take home something for dinner. Same with business. Now's the time to plan for the day when you can get all the materials you want, with allocations gone, orders maybe not so plentiful, and competition red-hot. ● Allegheny Stainless Steel can work marvels in adding sales advantages to the products you make, or reducing operating costs in the equipment you use. Let our Development Engineers show you how.

Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.

AL
TIME-TESTED
STAINLESS STEEL

You can make it *BETTER* with

Allegheny Metal

WAD 4099 B

have you heard this

TURBINE WHEEL STORY

It's a matter of *design* and *engineering*
...and it's all in the interchangeable fixture!

TWO TURBINE WHEELS
- with different diameters
- with 8-branch and 4-branch "pine tree" slots

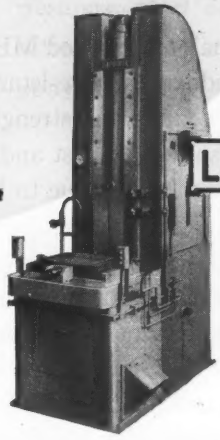
BROACHED WITH THE SAME BROACH!

Here's an instance where **LAPOINTE** engineering resulted in the saving of time and money, tools and machines.

Because this jet engine manufacturer required *two sizes* of turbine supercharger shaft assemblies, we designed the slot so the *same broach* could serve for both diameter wheels. For the larger wheel, all four "pine tree" branches are used; for the smaller wheel only three are used.

The interchangeable fixture makes it possible to broach both wheels on the same machine, with the same broach!

50 YEARS IN BROACHING
We're the oldest in the world!
1902 • GOLDEN ANNIVERSARY • 1952



LAPOINTE
Single Ram Vertical
BROACHING MACHINE
Available in several sizes and capacities.
Fully described in our Bulletin JKV3.
Write for it.

LAPOINTE ENGINEERING *can help you in all your broaching problems. Fifty years of experience in building broaching machines, broaching tools, and fixtures can be placed at your disposal promptly ... on request.*

THE LAPOINTE MACHINE TOOL COMPANY
HUDSON, MASSACHUSETTS • U. S. A.
Branch Factory: Watford, Herts., England

THE WORLD'S OLDEST AND LARGEST MANUFACTURERS OF BROACHING MACHINES AND BROACHES

● **Corrosion resistant**

● **Extra strength** ● **Uniform temper**

Keystone's Galvanized MB Wire offers improved corrosion resistance . . . gives added life and strength to mechanical springs subject to rust and corrosive conditions. This is due to Keystone's unique method of galvanizing the wire before it is cold-drawn. The drawing process smooths and hardens the galvanized finish, improving its lasting qualities. This smooth finish, corrosion resistant spring wire is also furnished in Type 2 and Type 3 heavy weight zinc coatings before drawing to meet specified salt-spray tests.

INDUSTRIAL WIRE SPECIALISTS

Keystone Steel & Wire Company
PEORIA, ILLINOIS

LETTERS
TO THE EDITORS

Prices Bump the Ceiling

I have read with interest your editorial "The Golden Egg" (Aug. 25, p. 59).

The methods being used by our labor leaders are certainly going to react to the detriment of all producers and the citizens as a whole.

I am certain that even the final settlement of the steel strike is going to accelerate pricing a great many things out of the market.

W. Harnischfeger
president
Harnischfeger Corp.
Milwaukee

Keeping Employees Informed

We would like 10 copies of your article "Metalworking Destiny" in the Jan. 7 issue of STEEL. After hearing a talk today by one of our state's leading industrialists, we feel that your editorial will be a good way of introducing a vivid picture of our nation's situation to our employees.

Douglas A. Ogilvie
Auto Body Works Inc.
Appleton, Wis.

● *They're sent.—ED.*

Permyron: Popular Process

An article on the Permyron process (a new process that gives high corrosion resistance to mild steel and other ferrous metals) appears in STEEL (July 28, p. 99).

We are interested in obtaining the address of the Stanwood Oil Corp., who now holds the licensing right to the Permyron process, and would appreciate your sending it to us.

R. C. Kopituk
metallurgist
Reaction Motors Inc.
Rockaway, N. J.

. . . we're interested in obtaining further information on the Permyron process.

R. G. Robey
Magnesium Co. of America
East Chicago, Ind.

. . . we're interested in obtaining further information.

S. C. Frye
Bethlehem Steel Co.
Bethlehem, Pa.

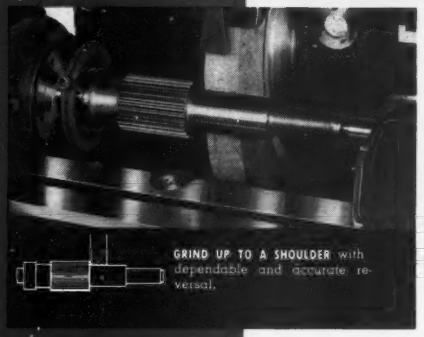
● *Write John A. Kaye, president, Stanwood Oil Corp., New York, N. Y.—ED.*

Plastic Dies Spread Out

In a recent issue of STEEL, we noticed an item pertaining to plastic dies. We understand that the aircraft industry has used these for quite some time, and that the automotive people, while not interested earlier are now considering the use of dies made from plastics.

We are particularly interested in this project and are wondering if you could put us in touch with someone who makes

GRIND TWO DIAMETERS IN ONE OPERATION with spaced wheels mounted on the same spindle.



GRIND UP TO A SHOULDER with dependable and accurate reversal.

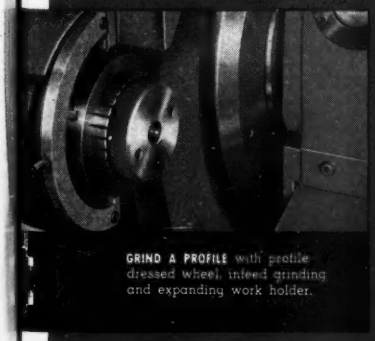
GRIND UNDER A PROJECTION with wheelbase set at 30° angle for special footstock center.

6 Ways to Cut Grinding Costs with Modern Landis CH Plain Grinders

All of the latest advances in modern precision grinder design are included in the 6" Type CH and 10" Type LCH Plain Grinders. Modern Landis grinders of this type provide answers to grinding problems of cost reduction and increased production. For production estimates and tooling suggestions, send us prints of your work pieces. Landis Tool Company, Waynesboro, Pennsylvania.

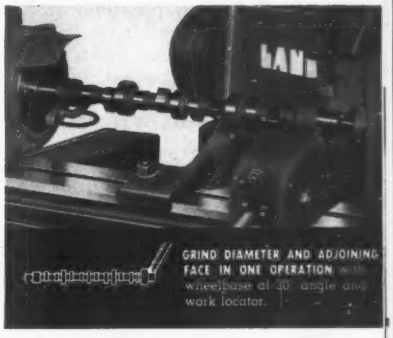
LANDIS
precision grinders

161A



GRIND A PROFILE with profile dressed wheel, infeed grinding and expanding work holder.

TRAVERSE GRIND WITH AUTOMATIC WHEEL FEED feeds at each or either reversal point.



GRIND DIAMETER AND ADJOINING FACE IN ONE OPERATION with wheelbase at 30° angle and work locator.

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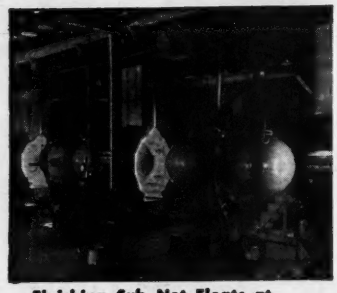
PRODUCT FINISHING

PAINT BAKING • DEGREASING • COAT DRYING

FOSTORIA INFRA-RED
Golden Wall Evenray Ovens

Paint Baking at Kaiser-Frazer

In this oven for body finish baking, controls vary heat for prime coat at 350°F for 12 minutes to finish lacquer coat at 175°F for 12 to 15 minutes. A smaller oven is used for smaller parts.



Finishing Sub Net Floats at Eaton Metal

Inside and outside zinc chromate and Navy gray finish coats are each baked in 12 minutes at 200°-250°F in these three small Fostoria ovens. Floats are 58" diameter, weight 1000 lbs.

Coat Drying at Standard Steel Spring

Protective coating sprayed on steel sheets before forming auto bumpers is dried in 1 minute eliminating bottleneck of former hot air drying. Production quadrupled.

Drying (Porcelain) Slip Enamel at Athens Stove Works

Dried in less than one minute in a Fostoria oven before high temperature firing. Photo shows one of two ovens used.

Cost reduction — a major problem in industry today — has been solved quickly by thousands of plants through the modern Fostoria Infra-red process for product finishing. Production results with Fostoria Infra-red Ovens are amazing. No other heating process approaches the speed, the ease of control, the low "per-piece" production cost of the high efficiency engineered Fostoria oven. Only Fostoria combines the highest efficiency energy source, lamp Infra-red, with the highest efficiency oven construction, Gold-lined Evenray oven walls. In productive use of energy, in uniformity of heat distribution, in flexibility of control and adaptability to any requirement, the Fostoria oven outperforms, outmodes, any other equipment. Write for the full facts, today!

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LETTERS

Continued from page 10

these dies or has all the detailed information pertaining to them.

J. M. Heimerl
purchasing manager
Fedders-Quigan Corp.
Buffalo, N. Y.

• *Material referred to in the June 30 issue concerned Dodge's truck division. A more complete story containing the information you seek appears in the Production Engineering section of the current issue, p. 92.—ED.*

Metal Market a 'Must'

During times like the present, when there is a tremendous volume of inquiries and general work, it is impossible to keep up with the usual fare of magazine reading.

At such times, I find that "The Metal Market" section in the back of each issue of STEEL always gets my attention. Editorials and trade news run a close second.

J. R. Pratt
Hudson Steel Supply Co.
Providence, R. I.

Description Not An Invitation

In your article "Hot Dip Aluminizing Affords Protective Surface," (July 14, p. 100) is the paragraph entitled "Salt Furnace."

The method described in that paragraph is protected by a patent owned by us. We are bringing this to your attention so that inadvertently the article will not be an invitation to infringement of our method.

H. E. Linden
president
American Mollerizing Corp.
Beverly Hills, Calif.

Sustained Interest in Solder

Your article "Solder Is Noncorrosive" (July 28, p. 75) with respect to noncorrosive fluxes as developed by the Army Signal Corps is extremely interesting.

Since these News at a Glance items must necessarily be short, we desire more information about these fluxes if that is obtainable.

H. H. Simons
Alpine Metals Mfg. Co.
Flushing, N. Y.

Please give us more information on the solder and flux . . .

H. R. Dane
Linde Air Products Co.
Tonawanda, N. Y.

• *Write to the Library of Congress, Photo-Duplication Service, Publications Board Project, Washington, and ask for Progress & Summary report on Non-corrosive Fluxes for Universal Applications. —ED.*

What's That—Silicone?

Will you please send me a copy of the booklet that defines organo-silicone-oxide polymers according to application as noted under the heading "What's a Silicone" in STEEL (May 12, p. 118).

E. G. Yaeger
district industrial engineer
Republic Steel Corp.
Buffalo, N. Y.

• *That booklet is available from Dow Corning Corp., Midland, Mich.—ED.*

photograph by d'Arazien

Experts Use X-Rays— to be Certain about Tinplate!

TINPLATE—which forms the strong, safe packages for canned foods—is steel sheet coated thinly with tin.

To make sure the tin coating covers every square inch of the tinplate smoothly, J&L Research Laboratories developed and patented an X-ray Tin Thickness Gauge.

The men shown here are operating the latest model of the gauge in a laboratory. This is a highly accurate gauge that can measure quickly with X-rays the thickness of the tin on sample tinplate sheets taken from any of the production lines, electrolytic or hot-dip, at J&L's Aliquippa, Pa., plant.

Another gauge, operating on the same principle, is installed on the continuous electrolytic tinning lines at Aliquippa, giving a constant check on the tinplate.

Here's the secret of the amazing gauges: X-rays of a certain wave length will cause fluorescence in the steel sheet, but not in the tin coating. Some of the fluorescence will be absorbed in the coating, the amount depending on its thickness. X-rays are shot at the tinplate, and the resulting fluorescence is measured, giving a reading that tells the thickness of the tin coating.

The X-ray Tin Thickness Gauge insures uniform high quality on tinplate for the food packaging industry, and at the same time helps to conserve tin, one of the critical metals.

This is an exclusive development of J&L Research, one of the many activities carried on behind the J&L trademark to provide better steel products for you.

JONES & LAUGHLIN STEEL CORPORATION

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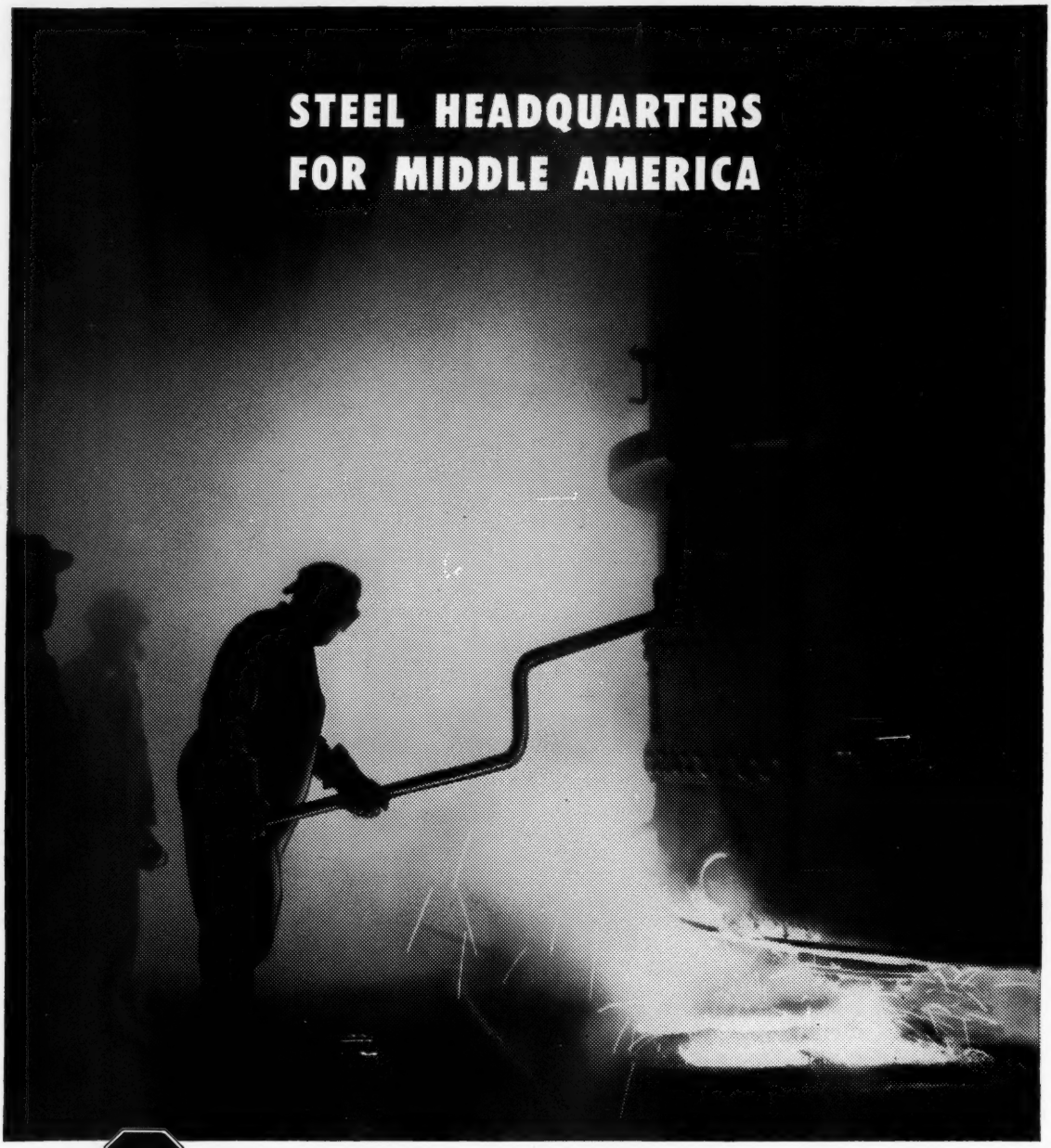

SINCE
GRANITE CITY STEEL
1878

Middle America, backbone of the nation, gets part of its strength from Granite City Steel's modern mills. Since 1878, Granite City Steel has been the main supplier of quality steel for Middle America. And today we continue to keep pace with Progress . . . continue to be Steel Headquarters for Middle America.

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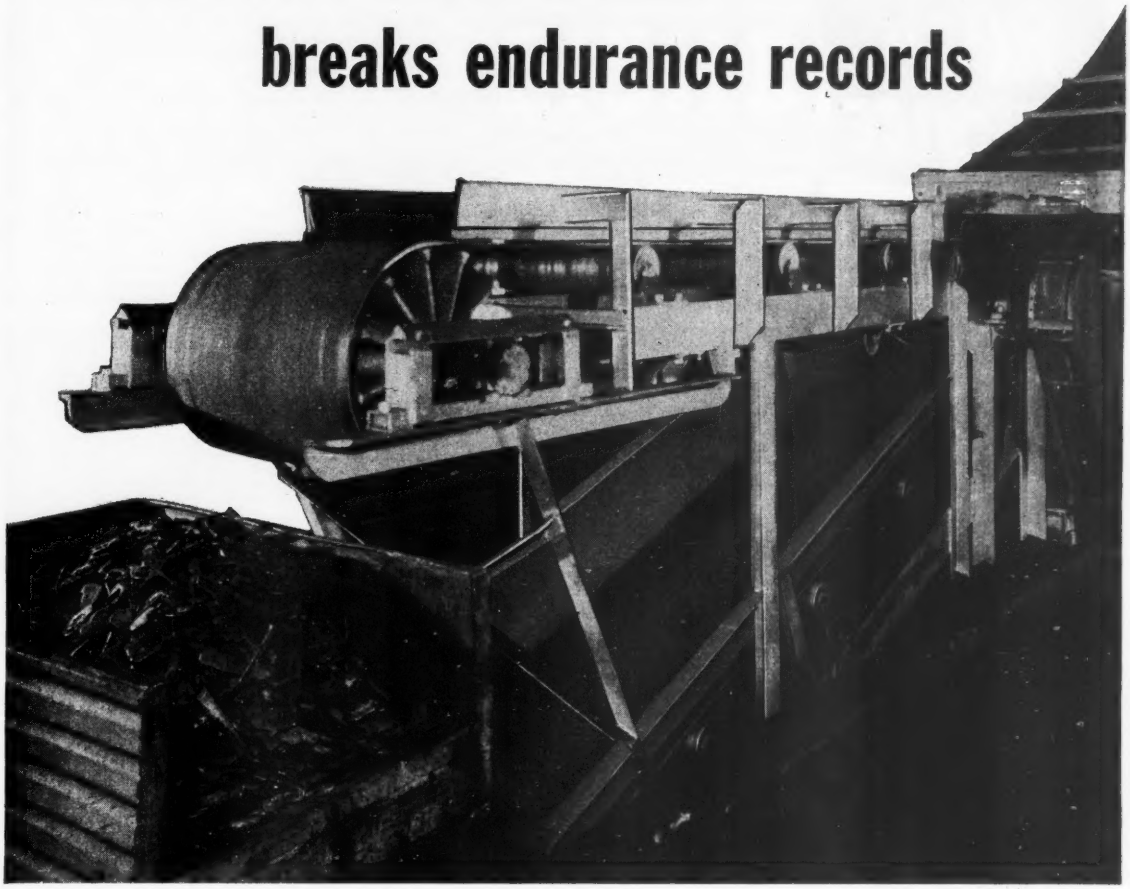
GRANITE CITY STEEL COMPANY, Granite City, Illinois

NEW foundry shake-out belt breaks endurance records



In one of the largest gray iron foundries in the world this rip-proof NYB&P Shake-out Belt is still in service after 9 months of working 8 hours a day. This is more than twice as long a service record as any belt previously used! It is 30 inches wide; 5-ply; 110 feet center to center. It is only one of many NYB&P belts in this foundry.

The NYB&P Shake-out Belt is not only ideal for foundries, but also for any installation where there is constant danger of the belt being ripped. You will find that every NYB&P industrial rubber product is outstanding in performance and economy. For full information, contact your local NYB&P Distributor.

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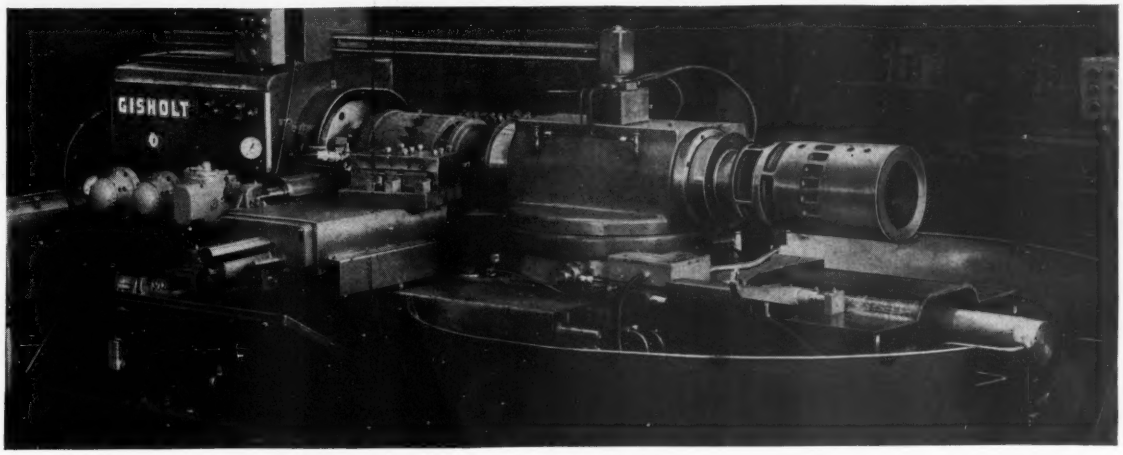
Production Pointers from GISHOLT

GISHOLT

TIME-SAVING IDEAS

Presented as a service to machine shops, we hope some of these interesting ideas, culled from thousands of jobs, will suggest ways to help you cut time and costs in your own metal work.



No. 24 Hydraulic Automatic Lathe with special turret having two mandrels.

PIVOTING MANDRELS END LOADING TIME LOSS

No. 24 Hydraulic Machines One Part While Another Is Loaded

In this interesting production pointer, loading time is actually part of *machining* time—with one workpiece being put on the lathe or taken off while another is being machined.

The part is a diesel engine cast-iron cylinder liner and the machine is a No. 24 Hydraulic Automatic Lathe which has two identical expanding mandrels on an indexing carriage. Twin arbors are mounted 180° apart with ratchet teeth for driving.

Single Automatic Operation

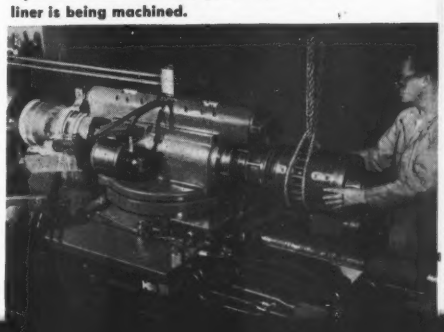
The automatic cycle begins with carriage moving forward until the arbor engages driving teeth in the spindle nose. This brings in the front and rear slides carrying a total of 28 tools which machine all outside diameters, faces and chamfers. With cuts completed, the tool slides retract, the work carriage traverses back and automatically indexes the new workpiece into position.

This feature achieves important savings in time and added production. With a finished liner being unloaded and new workpiece put in place *during* machining, loading and unloading time are absorbed in the machining cycle. Hence, the machine spends most of its time making chips. The only lapsed time between machining is for traversing up, back and for indexing—less than half a minute! Machining time for this liner—and other sizes handled on other No. 24 Hydraulics—is below 3 minutes . . . good reason why this manufacturer standardizes on the efficiency of the No. 24 Hydraulic Automatic Lathe for these operations.

With Twin Mandrels This No. 24 Hydraulic Provides Continuous, Fast Production with No Lost Loading Time.

Machined cylinder liners.

Operator loads new workpiece while another liner is being machined.



GISHOLT

TIME-SAVING IDEAS

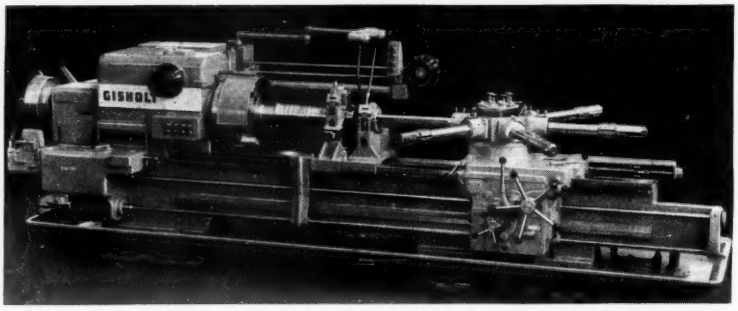
HOW THIS DIFFICULT BORING JOB BECAME AN EASY ONE . . . *MORE ACCURATE, TOO*

Saddle Type Turret Lathe Is the Answer

Here's the kind of job that qualifies as a tough one, any day. Yet see how this turret lathe takes it in stride. The part is an alloy steel propeller shaft measuring 36½"—with various inside diameters to be machined.

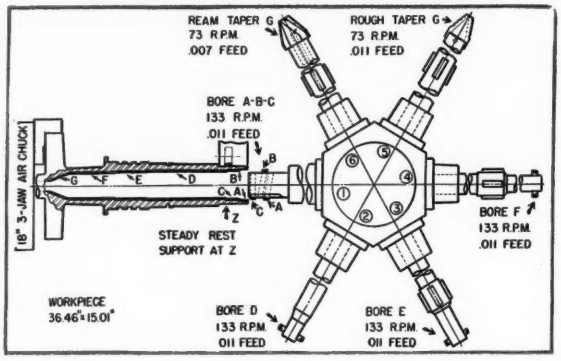
A standard 2L Saddle Type Turret Lathe is "tailored" for the assignment: In place of the side carriage there is a quick-clamping steadyrest and boring bar support. For safety and convenience, the handwheel for the Hydraulic Speed Selector and the emergency push-buttons are duplicated at the working position.

As shown in the layout, seven different internal surfaces are handled. One of these is the taper bore which is rough and finish reamed. Coolant flows through the boring bars directly on the tool bits. Floor-to-floor time with this well planned setup is 30.5 minutes with a high degree of accuracy, proving again that tough jobs can be easy ones on a Gisholt Saddle Type Turret Lathe.



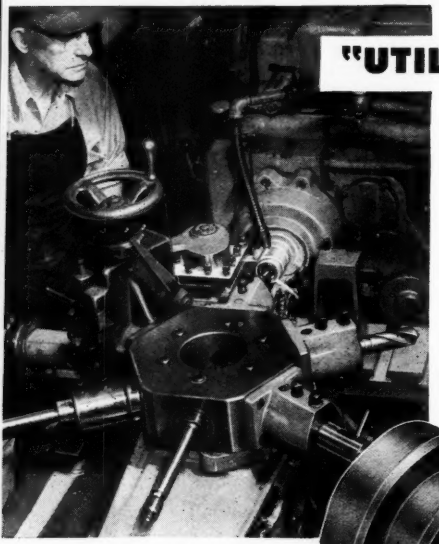
Good setup for deep boring. Note added steadyrest and boring support. Also duplicate controls.

Tooling layout for boring propeller shafts.

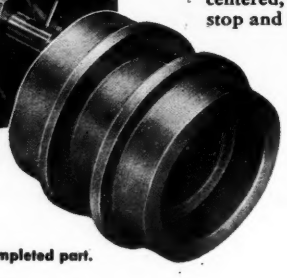


This Saddle Type Lathe Completes All These Difficult Interior Surfaces in One Chucking.

"UTILIZING EVERYTHING BUT THE SQUEAL"



This close-up shows simultaneous operations on clutch part from both turrets.



Completed part.

Hard Working Ram Type Lathe Setup for Clutch Parts

This job leaves nothing to be desired from the standpoint of efficiency. Everything on the lathe is busy . . . and that's good! The machine is a No. 5 Ram Type with standard hydraulic bar feed and collet chuck and its business is producing 2¼" sliding clutch shifters. Here's how it does it:

1. Stock is moved out to length and centered, using combination stock stop and starting drill.
2. Counter-bore and small bore are drilled from the hexagon turret while both hubs are turned from square turret.
3. Center recess is formed from square turret and the end is then faced from rear tool post.
4. Grinding relief is turned (both sides of center recess) from square turret.
5. Small ID is finish bored and reamed from hexagon turret.
6. Counterbore is finished from hexagon turret and cut off from square turret.

Floor to floor time is 7 minutes—with every minute of the way made easy for the operator by these Gisholt features which provide: 1. Shifts to new spindle speeds by a simple twist of the Hydraulic Speed Selector. 2. Proper spindle speed for reaming the small ID by merely tapping the Hi-Lo lever. And, 3, ease of changing feed by setting a single dial-type lever.

A Splendid Example of Well Planned Tooling and Simultaneous Machining from Both Turrets — Gives Maximum Efficiency to This Ram Type Turret Lathe Job.

GISHOLT

TIME-SAVING IDEAS

A ONE-MAN, TWO-MACHINE TEAM

Gear Blank Savings Are "Automatic"

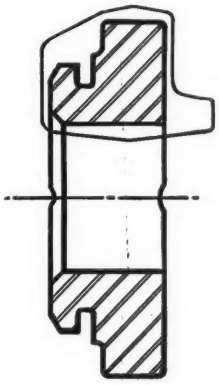
It's a case of perfect teamwork . . . the way these two 2F Fastermatic Automatic Turret Lathes turn out gear blanks. Splitting the job accounts for important savings in time, money.

First machine: With the steel forging held on the chucking hub, three passes are taken through the bore and two passes across the face, then rough turn and chamfer—all handled from the turret. Rough and finish grooving is done by tools on the independent front and rear cross slides. Time: 5 minutes.

Second machine: Part is held in the bore while turret tools remove chucking hub, semi-finish and finish the various diameters and chamfer. The two cross slides complete the rough and finish facing. Time: 3 min.

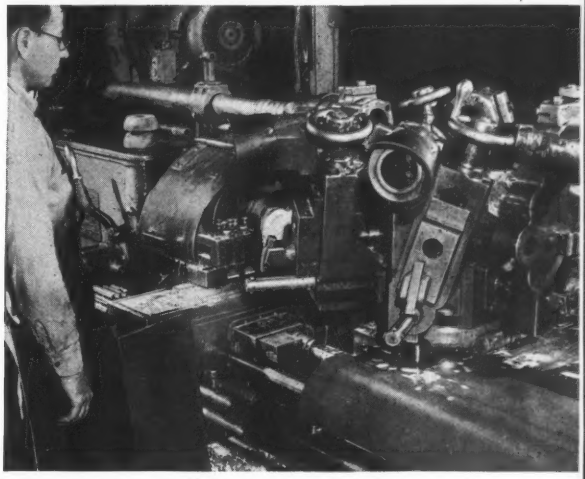
Not only is gear blank production made fast by this two-machine setup, but it's planned for real economy with one operator tending both lathes. Moreover, with the chance for human error eliminated by the automatic operation of the Fastermatics, there's assured accuracy with true concentrics and parallels.

For gear blank work—or any kind that belongs on an automatic turret lathe, investigate the Fastermatic.



Operations required to finish gear blanks. Light line indicates rough forging.

Rough forging and completed blank.



First operations on gear blanks are performed by this Fastermatic.

On This Gear Blank Job, Operator Is Needed Only for Loading and Unloading—the Two Fastermatics Automatically Perform All Work.

PUTS FINISHING TOUCHES TO CRANKSHAFTS — *BUT FAST*

Simplimatic Does Neat Job on Counterweights

Crankshafts always make interesting machining jobs. On this one, for a V-8 engine, a Simplimatic Automatic Lathe takes care of the six counterweights. Here's the setup:

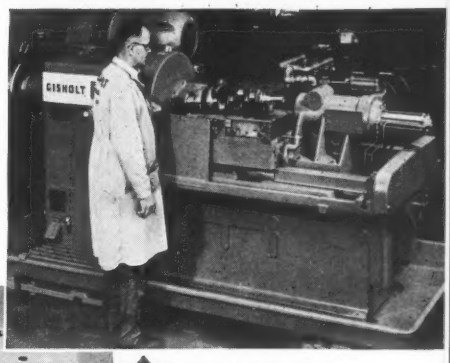
The 25½" crankshaft is held in a special pot-type chuck and driven from a slot in the flange. The oil seal bearing surface rests in a half bearing and is clamped with two jaws. There's a steadyrest at number three main bearing for support. Number one main bearing is held in a tapered, slip-fit bushing in the tailstock.

Three tools each in both the front and rear slides turn all six counterweights and generate chamfers ⅛" by 45 degrees. Floor to floor time is 1.66 minutes, using H. S. S. cutting tools. The sliding tool holders, a precautionary feature for this job, retract into master blocks after cycle is completed, thereby providing loading clearance and tool protection.

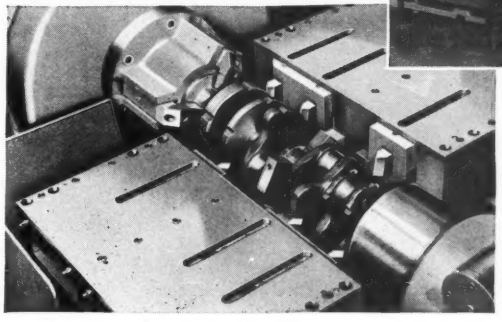
All Crankshaft Counterweights Are Turned and Beveled in a Single Automatic Operation by the Simplimatic.

JUST OFF THE PRESS!

An entirely new Simplimatic catalog is ready—complete with the information and specifications you want, pictures and job facts. Write today!



The Simplimatic with part ready for loading. Tool blocks at this point are retracted for clearance and tool protection.



Close-up of the workpiece and tooling. Note steadyrest for center main bearing.

GISHOLT

GISHOLT

TIME-SAVING IDEAS

HOW MAINTENANCE BALANCING PAYS FOR ITSELF

Southern Railway Company Adds Life to Diesel-Electric Equipment

Southern Railway Company is doing it, too. In its Pegram Repair Shop, Atlanta, they are getting even greater efficiency and performance from diesel electric locomotives—through balancing. A 6U DYNETRIC Balancer handles balancing in the maintenance of traction motors and generator armatures.

An example is this traction motor armature. Measuring 4 feet long and weighing 2500 lbs., dynamic unbalance is located and measured to an accuracy of ¼ ounce inch. Corrections are made by welding small steel blocks on the core while the armature is still in the balancing machine. A final check for accuracy and possible operator error is then made.

On this large electrical part, the entire operation—setup, loading, checking, correcting, rechecking and unloading—only requires about one hour. Yet, this accuracy of balance—with smoother, vibrationless operation and lessened bearing wear—pays off in far longer life between overhauls, returning balancing costs many times over.

If maintenance of electrical equipment is a problem of yours, ask for the article on balancing applications in railway shops. With it we will include the book *Static and Dynamic Balance,* which thoroughly covers the entire field of balancing.

ALL MATTERS OF BALANCING, *maintenance and production balancing are covered fully in the Gisholt Balancing School. Write for details, starting dates.*

Ready to check and correct unbalance in 2500 lb. armature.

Dial indicates exact number of correction units required.

Precision Balancing of Railway Electrical Equipment Greatly Reduces Frequency of Failure and Assures More Efficient Operation.

DYNETRIC BALANCERS GISHOLT

DEVELOPED JOINTLY WITH WESTINGHOUSE ELECTRIC CORPORATION "DYNETRIC" IS A TRADE MARK REG. U. S. PAT. OFFICE BY WESTINGHOUSE ELECTRIC CORPORATION

THE WAY TO BETTER CRANKSHAFTS—SUPERFINISH

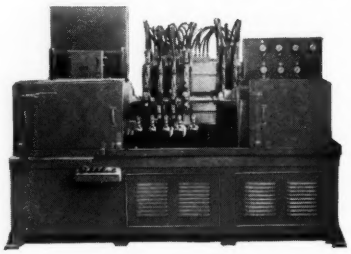
Versatile Machine Handles Variety of Sizes

Even on diesel engine crankshafts, Superfinishing is a quick, inexpensive process.

This Superfinisher is a Model 77, arranged to do both pin and main bearings on a variety of 4 and 6 throw crankshafts. Four sets of stones in each of the upper stoneholder assemblies handle the pin bearings. Lower assemblies each have two sets of stones for the main bearings.

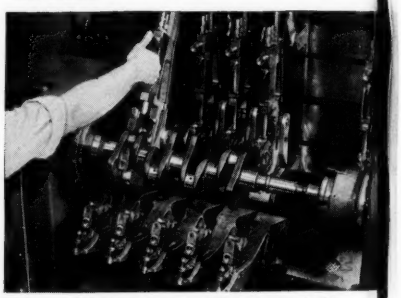
Crankshafts come to the Superfinisher with rough ground bearing surfaces of 20-30 micro inches. After a 2.3 minute automatic cycle, surfaces measure 4-5 micro inches. What this finer smoothness means in greater crankshaft performance is obvious—grinding chatter marks and smear metal are removed, there's improved geometry, added smoothness and longer bearing life.

See how your own problems can be solved by Superfinishing. Write for your complimentary copy of *"Wear and Surface Finish."*



Model 77 Superfinisher for 4 and 6 throw crankshafts.

Superfinishing These Crankshaft Bearings Not Only Assures Longer Lasting Surfaces, but It Also Cuts Grinding Time and Costs.



Close-up showing upper and lower stoneholder assemblies for Superfinishing pin and main bearing simultaneously.

No. 9-1052

599

GISHOLT

THE GISHOLT ROUND TABLE represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

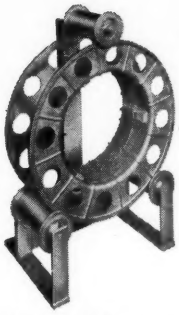
GISHOLT MACHINE COMPANY

Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

NOW

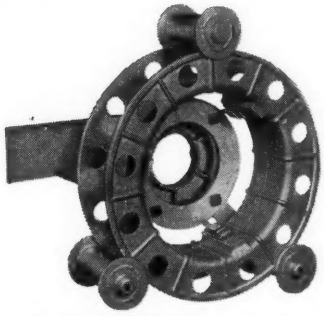
Double and Triple weight coils for automatic welding with the new REID-AVERY (free wheeling) REELS for Submerged Arc, Open Arc, and Gas Shielded Arc Welding



Raco Reel for 150-200# coils with floor mounting stand.

Decrease down-time by using larger coils. Machines now equipped for 25 lb. coils can use up to 75 lb. coils with these new reels.

These cast aluminum alloy reels ride on ball-bearing trunnions with deep flanges. The wire uncoils with remarkable ease and yet there is no chance of overrunning and throwing loops over the side. No brakes or drags of any kind are necessary. The wire itself prevents overrun. These "free wheeling" reels provide the absolute minimum load on the automatic welding machine.



Raco Reel for 25#-50#-75# coils. Mounted on popular submerged arc machine.

The Reid-Avery reels are available with stands for floor mounting or with special spiders for direct attachment to most popular automatic welding machines. Three reels 12" ID x 4" wide, 14" ID x 6" wide, and 25" ID x 4" wide nominal size are in stock for prompt delivery.

Raco Reel shown split for loading.

Note the simple split reel construction with suitcase type latches. Coils can be replaced in seconds and no wrenches or special tools are required.

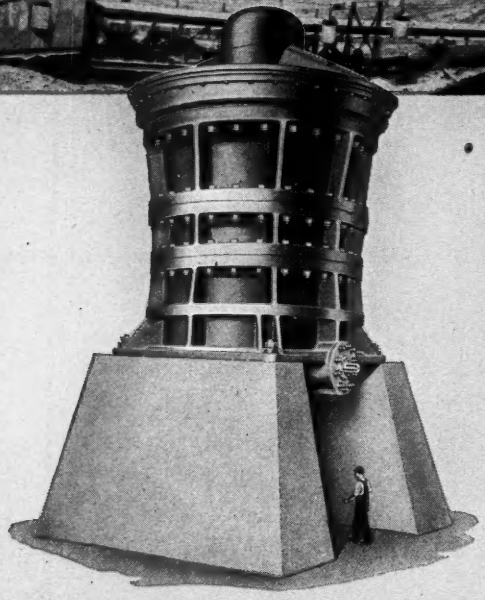
We are equipped to supply all sizes of layer wound coils for these reels.

The REID-AVERY COMPANY

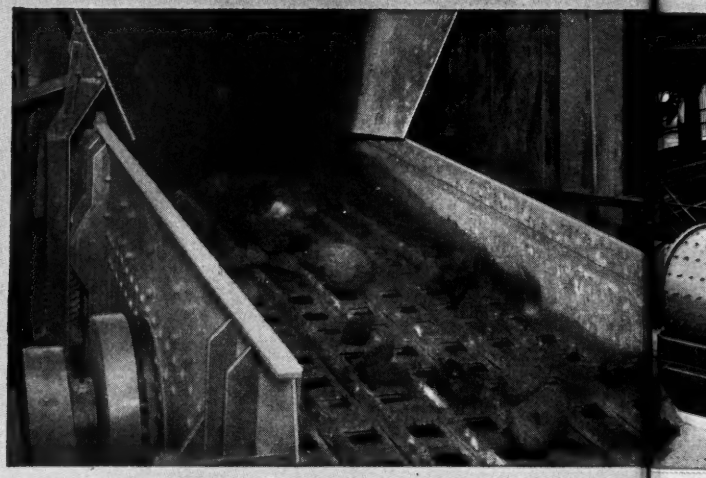
INCORPORATED

DUNDALK • BALTIMORE 22 • MARYLAND

SINCE 1919 PRODUCERS OF ARC WELDING ELECTRODES AND WELDING RODS



WORLD'S LARGEST CRUSHERS are two 3500-tph, 60-109 *Superior* gyratories being built for Mesabi's first commercial taconite plant. Ultimate plant output will be 10 million tons.



FINES ARE SCALPED from r.o.m. ore on sturdy 1000-tph vibrating screens like this one in Minnesota. A-C builds *six* separate types of vibrating screens for beneficiation.

EQUIPMENT FOR IRON ORE BENEFICIATION: Gyratory and jaw crushers . . . Vibrating screens . . . All types of washers . . . Concentrating jigs . . . Rod, ball, and *Ballpeb* mills . . . Centrifugal pumps . . . Rotary kilns and coolers . . . *Texrope* V-belt drives . . . All types and sizes of electric motors and generators . . . Starters . . . Transformers and voltage regulators . . . Complete power generation, distribution, control equipment.

the Bottom!

As Mesabi Ores Lean Out, Allis-Chalmers Aids in Beneficiation

DIRECT SHIPPING ORES are fading fast up on the once fabulous Mesabi range. But despite foreign ore discoveries, by 1955 a quarter of blast furnace feed must be beneficiated domestic ore.

Allis-Chalmers — manufacturer of equipment for the steel industry from the mine to the mill — is helping lead the way to more economical beneficiation of lean ores.

Does low ore content require you to triple material handled? Allis-Chalmers will build you bigger, more efficient equipment! At far left below is the world's largest crusher, being built by A-C for a Mesabi taconite plant.

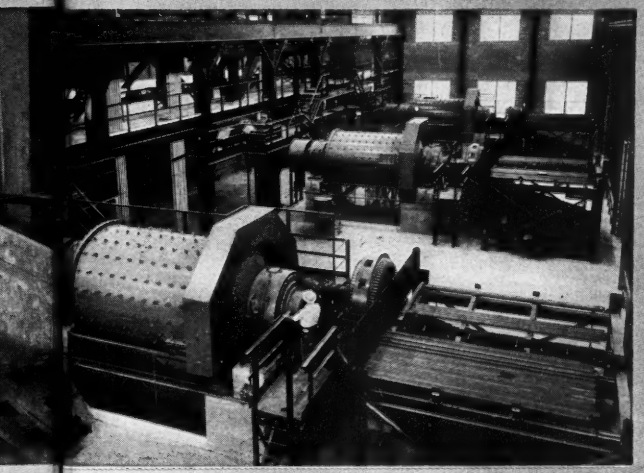
Has proper yet economical pelletizing got you stumped? Allis-Chalmers has just put into operation a pilot Pelletizing and Heat Hardening plant built exclusively for researching new pelletizing methods.

Do you have a beneficiation "shortcut" in mind? Don't let lack of equipment postpone your testing of new processes. The Allis-Chalmers Processing Research Laboratory stands ready to accurately and exhaustively test any processing method on a confidential basis.

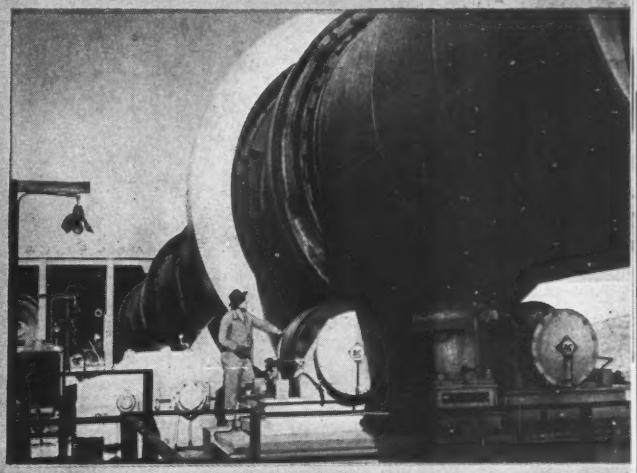
For over half a century Allis-Chalmers equipment has been processing ores for America's steel industry. Some of the cost-cutting, tonnage-increasing ore beneficiation equipment in the broad A-C line is seen on these pages.

Allis-Chalmers offers you *one-manufacturer responsibility* for process, drive and control equipment all along your flow sheet. For literature or detailed information on products and services, call your nearest A-C office or write to Allis-Chalmers, Milwaukee 1, Wisconsin. A-3808

Superior, Ballpeb and Texrope are Allis-Chalmers trademarks.



ORE IS GROUND in three rod and ball mills ahead of magnetic separation at this beneficiation plant. A-C builds *all* types of grinding mills for ore beneficiation processes.



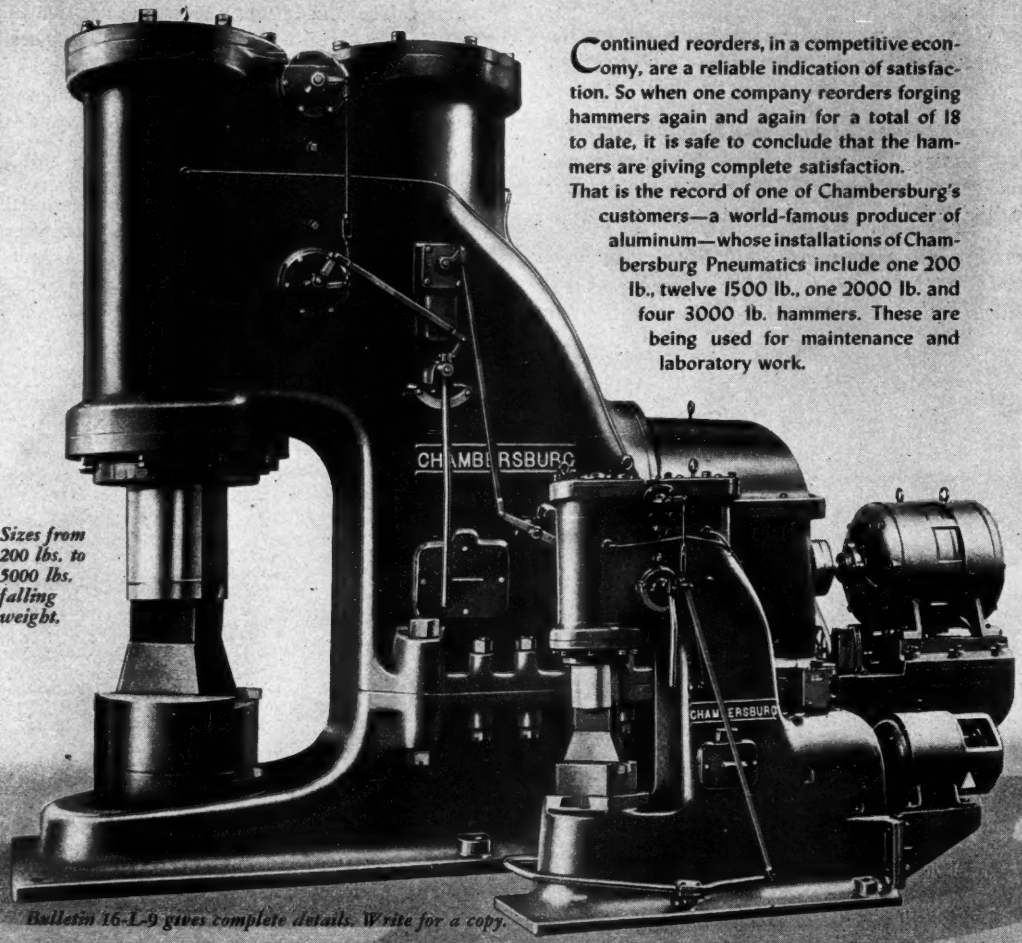
IRON ORE IS AGGLOMERATED to make good blast furnace and open hearth feed in Allis-Chalmers rotary kilns in connection with iron mines and beneficiation plants.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Power, Electrical, Processing Equipment for Iron and Steel

THE 18th CHAMBERSBURG PNEUMATIC FORGING HAMMER FOR ONE OF AMERICA'S LARGEST PRODUCERS OF ALUMINUM



Continued reorders, in a competitive economy, are a reliable indication of satisfaction. So when one company reorders forging hammers again and again for a total of 18 to date, it is safe to conclude that the hammers are giving complete satisfaction.

That is the record of one of Chambersburg's customers—a world-famous producer of aluminum—whose installations of Chambersburg Pneumatics include one 200 lb., twelve 1500 lb., one 2000 lb. and four 3000 lb. hammers. These are being used for maintenance and laboratory work.

Sizes from 200 lbs. to 5000 lbs. falling weight.

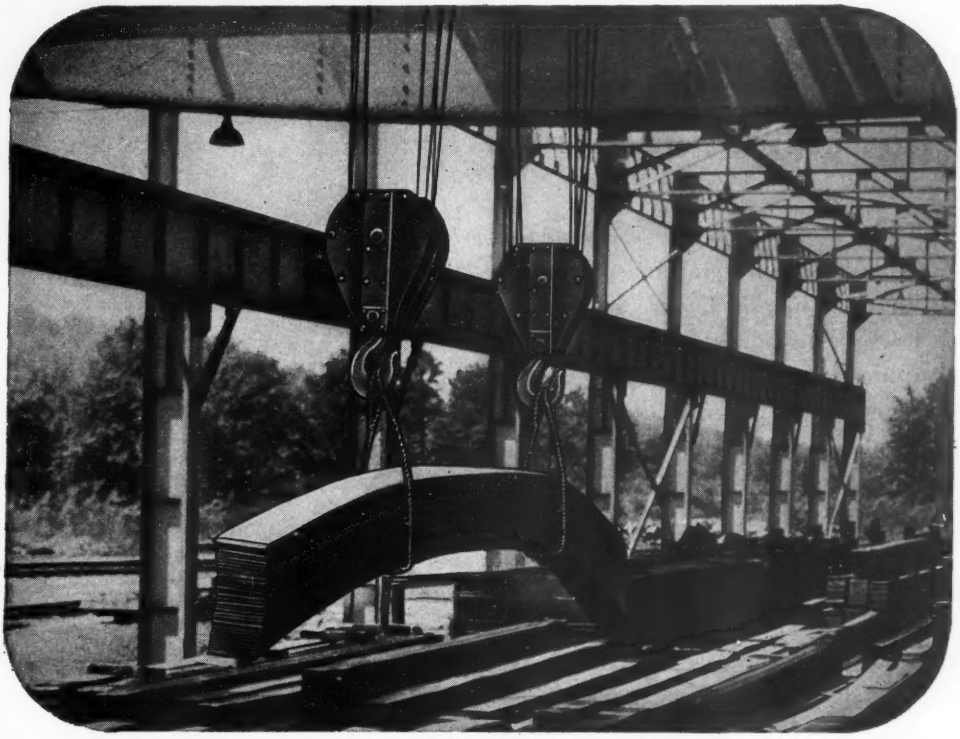
Bulletin 16-L-9 gives complete details. Write for a copy.

CHAMBERSBURG ENGINEERING COMPANY • CHAMBERSBURG, PENNA.

CHAMBERSBURG

THE HAMMER BUILDERS

WIRE ROPE



This is the longest-lasting rope we've ever made for industrial use

ROEBLING HAS been making wire rope for more than a hundred years. And during all that time we've been developing new kinds of rope, and making them better.

Today, about the first thing you ask about a wire rope is, "Has it got what it takes? Will it stand up and cut replacements?"

Our answer is an emphatic *yes*, because Roebling Preformed Blue Center Steel Wire Rope meets the severest tests of tensile strength, abrasion resistance and general toughness.

There's a Roebling rope that will prove the longest-lasting and most economical in your operations. Call on your Roebling Field Man for his recommendations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

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ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST • CHICAGO, 5525 W. ROOSEVELT RD • CINCINNATI, 3253 FREDONIA AVE • CLEVELAND, 701 ST. CLAIR AVE, N. E. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 HARBOR ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E. 2ND ST • PHILADELPHIA, 230 VINE ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, N. J.

all one piece ...*finned tube*

The fins are extruded from the tube itself

These two views show the construction of Wolverine Trufin* — the integral finned tube. The large drawing illustrates how the fins are formed from the wall of the tube and remain a part of it. Thus, Trufin's efficiency is unaffected by vibration or sudden temperature changes. This finned tube can be fabricated as easily as plain tube. Trufin has an outside surface area many times that of plain tube and points the way to greatly increased efficiency. In addition Trufin can often help you reduce unit size, installation and maintenance time, thus lowering your costs. Find out about Trufin, the integral finned tube, and its relation to your own heat transfer application. Available in a variety of sizes, fin spacings and alloys. Send for your copy of the new brochure, Wolverine Fabricated Parts.

*Reg. U.S. Pat. Off.

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Calumet and Hecla Consolidated Copper Company
Incorporated
Manufacturers of tubing exclusively
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Plants in Detroit, Michigan and Decatur, Alabama; Sales Offices in Principal Cities

Wolverine Trufin and the Wolverine Spun End Process available in Canada through the Unifin Tube Co., London, Ontario.

Export Department, 13 E. 40th St., New York City 16, N. Y.

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Coatings—

tops for toughest

corrosion problems

WHEREVER corrosion problems are toughest—you'll find that Pitt Chem Tar Base Coatings give you far *better* protection at *lower* overall cost. These tough protective coatings set up an impervious barrier to moisture and most industrial corrosives, with a film thickness up to 10 times as thick as ordinary paints. They're easy to apply and relatively low in cost.

What's more, you'll get top uniform application characteristics and a better bond with Pitt Chem Coatings. As a basic producer, we're able to control quality at each step of our production, from coal to finished product . . . in a plant designed exclusively for manufacturing coal tar coatings. This *basic* position is your best possible assurance of uniform top quality. So when you're specifying protective coatings—*buy basic—buy Pittsburgh.* Don't hesitate to ask for any technical data or application assistance you need. *Write today!*

PITT CHEM 101

A versatile, heavy duty coating that withstands severest corrosive conditions.

PITT CHEM 102

A thin, high gloss maintenance coating for steel and concrete surfaces.

PITT CHEM 103

A heavy duty coating for metal exposed to corrosive vapors, dilute acids and alkalis.

PITT CHEM 104

A fast drying, high gloss coating for equipment handling potable water.

W&D 4288

PROTECTIVE COATINGS DIVISION

PITTSBURGH COKE & CHEMICAL CO.

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COAL CHEMICALS • AGRICULTURAL CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

Competitively alert management long ago realized the wisdom of having key men "cover" the Big Metal Show . . . because here, as at no other place under the sun, are paraded in volume the *new,* the *advanced,* the *different* ideas, techniques and processes that mean to many a metals industry man the tried and proven way to better production and to better products. To get the answers, to learn whether or not your company can use the developments unveiled at the Big Metal Show, plan now to have your key men attend. It's the only way to keep in step with today's constantly changing markets.

OCTOBER 20-24 • PHILADELPHIA, PA.

FORD MOTOR COMPANY OFFICIALS INSPECT THE INTERCHANGEABLE UNITS OF THE . . .

New G-E Motor Control Center

Since January, over 10,000 men from production and management of leading industries (see above) have taken a thorough look at the latest equipment for the centralized control of a-c motors up to 200 hp. Their reports indicate enthusiastic approval of what they saw. Here's why:

VERSATILE. Because units are easily interchangeable without waste space, a variety of arrangements can be made. For example—two Size 1 or 2 starter units require the same space as a Size 1, 2, or 3 reversing starter.

ACCESSIBLE. A four-inch continuous wiring trough provides ample wiring space. Components are mounted on an easy-to-handle frame and accessible from all sides when lifted from cabinet. Starters are front-connected. Master terminal boards can be swung out of compartment for extra working space around conduit.

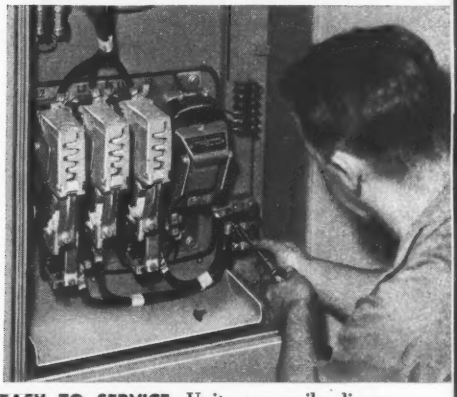
PROTECTED. Will withstand 25,000 amperes RMS short-circuit current, substantiated by certified Laboratory tests.

For more information on this new G-E motor control center, contact your nearest G-E apparatus sales office or write for Bulletin GEA-4979A today. *General Electric Company, Schenectady 5, N. Y.* 730-42

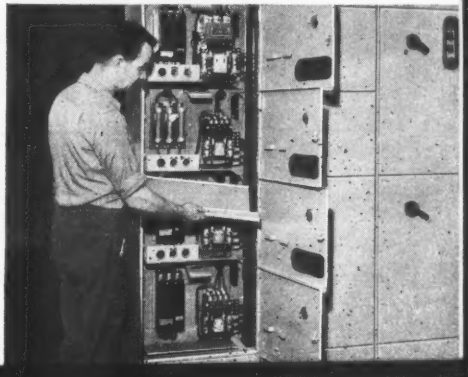
GENERAL ELECTRIC

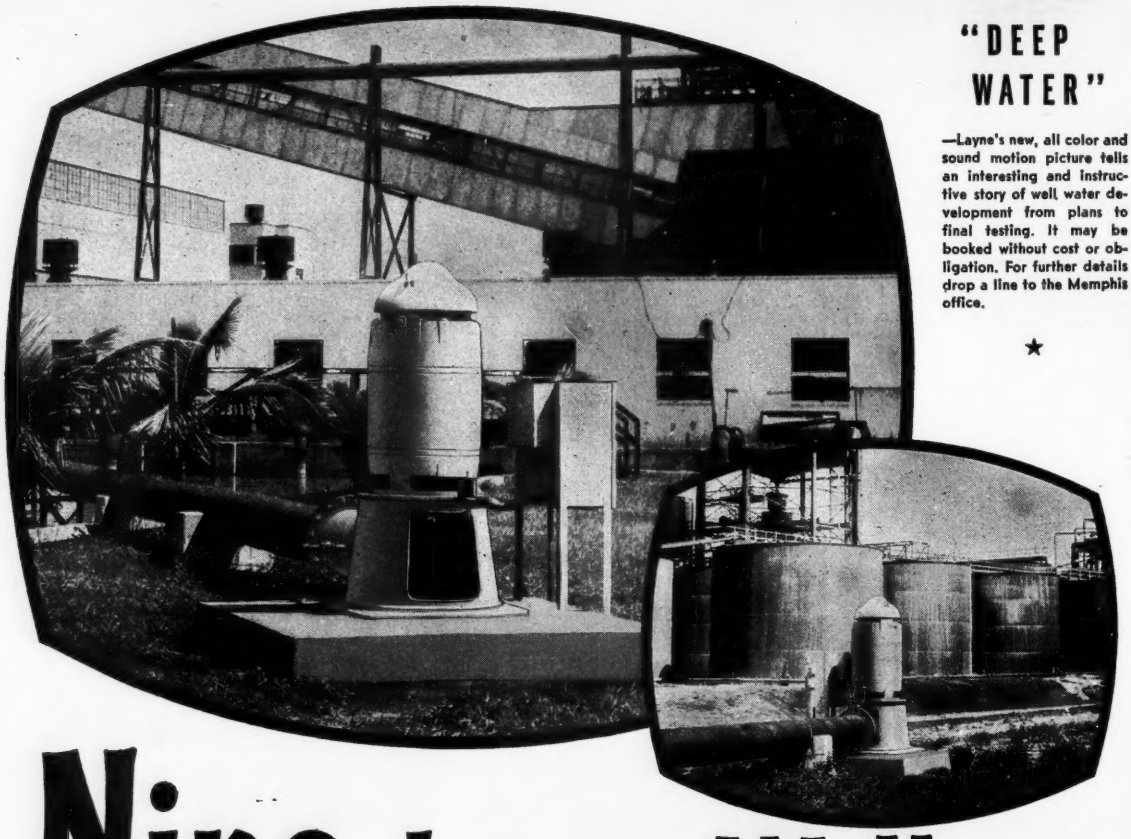
EASY TO INSTALL AND INSPECT. Interchangeable units; main bus completely accessible; incoming line connections are easily made.

EASY TO WIRE. Four-inch wiring trough; components accessible from all sides; front-connected starters; doors swing more than 90°.



EASY TO SERVICE. Units are easily disconnected from bus and locked in test position (above). Barriers between units are easily removed to facilitate wiring (below).





"DEEP WATER"

—Layne's new, all color and sound motion picture tells an interesting and instructive story of well water development from plans to final testing. It may be booked without cost or obligation. For further details drop a line to the Memphis office.

★

Nine Layne Wells

for this big Phosphate mining operator

Phosphate mining presents many unusual problems, one of which necessitates an ever dependable supply of low cost water. International Minerals & Chemical Corporation, on their big phosphate mining operations near Bartow and Orlando, Florida, are now using nine complete Layne well and pump units. These installations have a total maximum capacity of nearly thirty-thousand gallons of water per minute—enough for greatly increased mining activity.

And so here again we have a case of where water supply failure would stop everything—and where the owner had to be sure that he was buying the utmost in proven dependability, low cost operation and the kind of quality that would assure long life.

But the decision was easy. Layne water supply wells and pumps have an unmatched record of making good on every job no matter how heavy the production, or how long the hours may be. Whether for a mining operation, a city, factory or irrigation farm, Layne wells and pumps always give complete satisfaction and cost less in the long run.

LAYNE & BOWLER, INC.
General Offices, MEMPHIS 8, TENNESSEE

If you are contemplating the installation of water wells or pumps, it will be worth your while to have copies of our water supply or pump catalogs. Write for copies. No obligation.

Layne
WATER WELLS
VERTICAL TURBINE PUMPS
WATER TREATMENT

PERFECT SURFACE IS A "MUST". . .

Large drying rolls, like the one below receiving its final polishing pass, are used in "Yankee Dryer" paper-making machines which turn out soft facial tissue. Even slight surface flaws in these eight- and twelve-foot diameter castings cause them to be rejected.

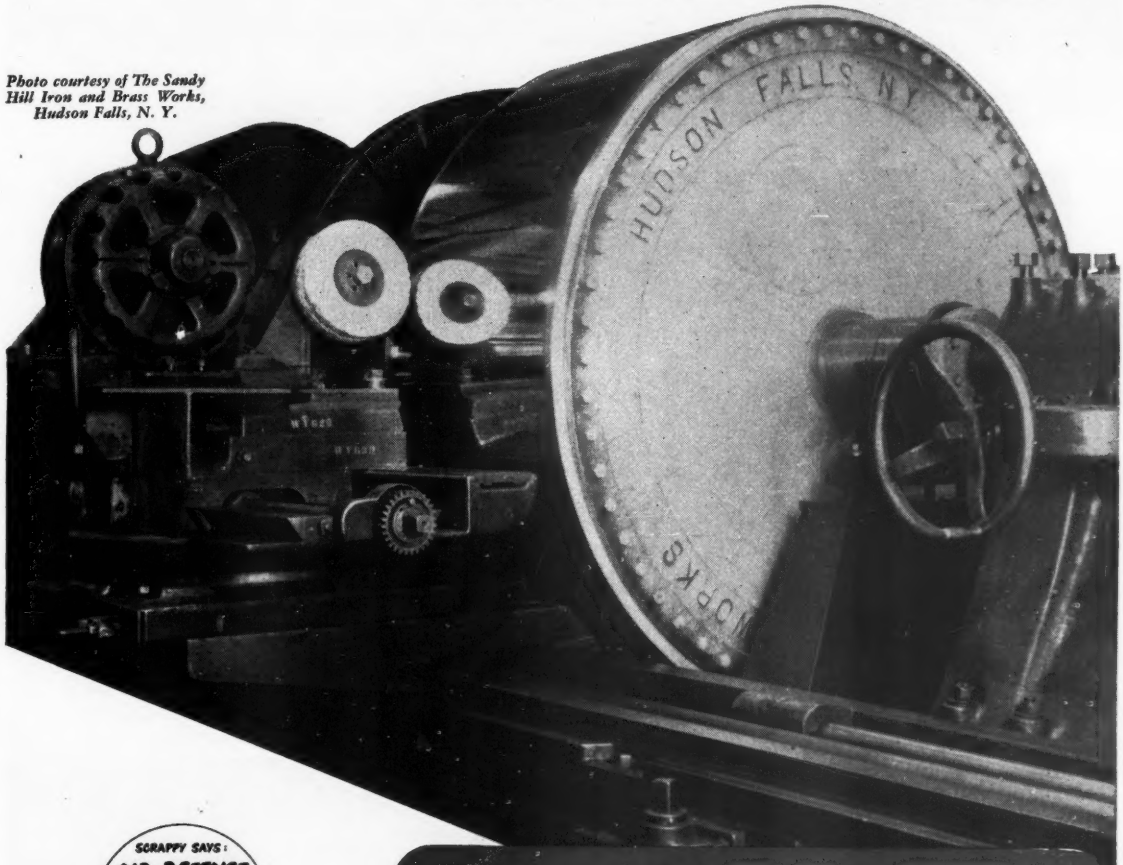
So they use CHATEAUGAY PIG IRON

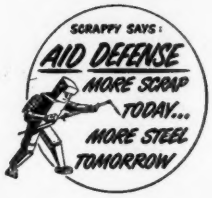
. . . the low-phosphorus, copper-free pig iron that has eliminated scrap losses in countless "tough casting" jobs. With CHATEAUGAY, consistently uniform "physicals" assure predetermined fine grain structure throughout every casting, regardless of size or shape.

Whatever the requirements of your castings—if ordinary pig iron won't do the job—NOW is the time to investigate the *exclusive* advantages of premium CHATEAUGAY. A Republic Pig Iron Metallurgist will be glad to give you the complete facts at your convenience. Write today to:

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York

Photo courtesy of The Sandy Hill Iron and Brass Works, Hudson Falls, N. Y.





Republic PIG IRON

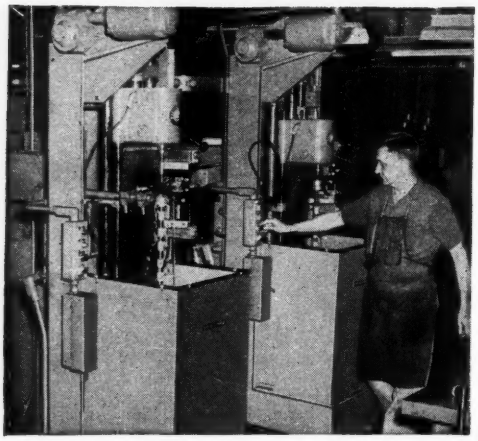
"CHATEAUGAY" Low-Phosphorus, Copper-Free | "REPUBLIC" (Northern) Foundry, Basic and Malleable | "PIONEER" (Southern) Foundry and Basic

REPUBLIC STEEL

WHICH OF THESE HEAT-TREATING PROBLEMS IS YOURS?

Cost Reduction?
Increased Production Rates?
Quality Control?
Reducing Distortion?
Production-Line Heating?
Floor Space?

Westinghouse induction heating helped Saco-Lowell solve all six



Saco-Lowell Shops, makers of outstanding textile machinery, had always experienced problems with hardened bottom front rolls.

A Westinghouse 50 KW-450 KC RF Generator, with two standard vertical scanners, helped increase line production rates by 145% with total annual savings of $18,800.00. Direct labor costs have been cut 63%. Journal bearings are now ground after hardening, producing a higher quality roll. Formerly, every shaft required straightening; now this operation has been simplified and costs are reduced 70%.

Look at the results obtained by Saco-Lowell with a Westinghouse process that can handle 432 different rolls. Examine your heat treating problems. They, too, may be reduced, clarified, or eliminated entirely.

J-02243

Westinghouse Electric Corporation
Department S-43
2519 Wilkens Avenue • Baltimore 3, Maryland

Send me your informative case history booklet on induction heating.

Name.....

Company.....

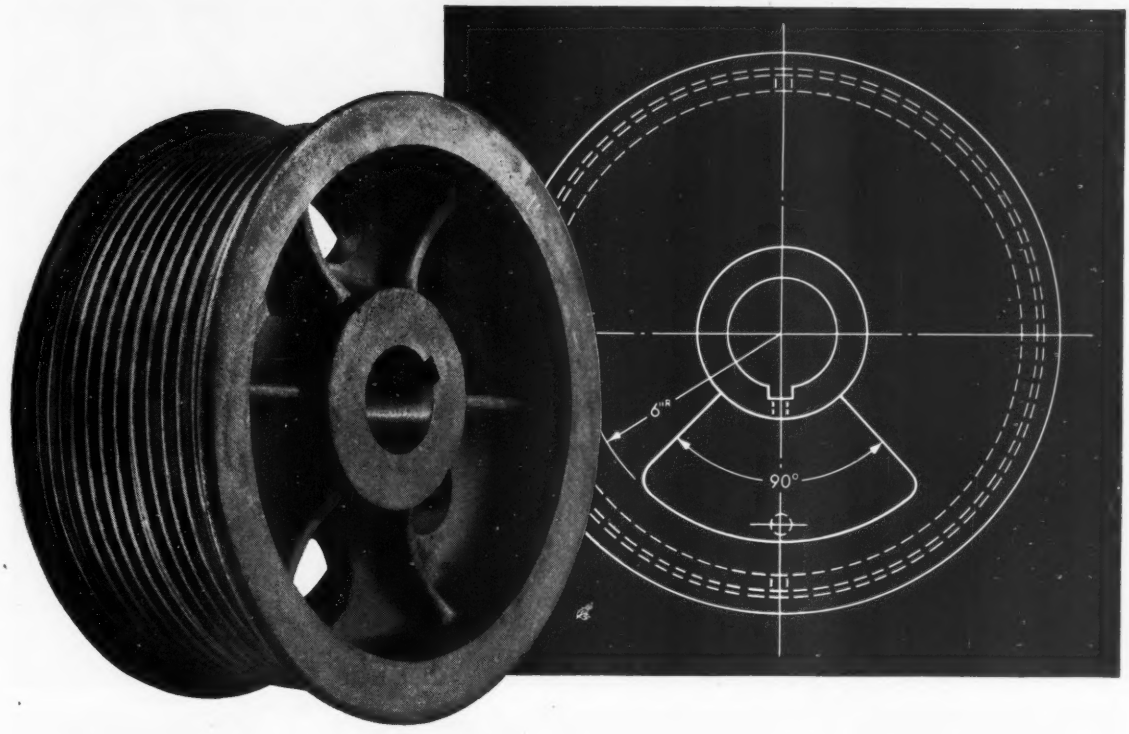
Street.....

City.....Zone.....State.....

YOU CAN BE SURE...IF IT'S

Westinghouse

INDUCTION HEATING



Costly to fabricate ECONOMICAL TO CAST IN GRAY IRON!

GRAY IRON Characteristics Include:

- Castability
- Rigidity
- Low Notch Sensitivity
- Wear Resistance
- Heat Resistance
- Corrosion Resistance
- Durability
- Vibration Absorption
- Machinability
- Wide Strength Range

The cable drum, shown above, was formerly produced by using plates of various thickness—cutting, assembling, welding and finally machining. Valuable and costly man-hours were expended in co-ordinating the efforts of the several mechanics involved in these operations. Thus, supervisory costs were added to high fabrication costs.

By redesigning the part as a Gray Iron casting, a cost saving of 41% per unit was effected. On a typical order involving 20 castings, the net saving to the customer was $197, *after* initial pattern cost had been written off. Note that grooves are *cast in* instead of machined, effecting a substantial saving in machining time.

In addition to these savings, much longer operating life can be expected, because of Gray Iron's superior resistance to metal-to-metal wear and galling.

Don't miss opportunities like this to save man-hours, cut costs, and increase operating life by *redesigning in Gray Iron!* Write for technical information on advantages of the Gray Iron casting process.

Make it Better with Gray Iron • **Second largest industry in the Metal-working field**

GRAY IRON FOUNDERS' SOCIETY, INC.

NATIONAL CITY-E. 6th BLDG., CLEVELAND 14, OHIO

Drilling Problem?

Black & Decker's Drill Line is a good bet to solve it!

Completeness of Line, Quality Construction Pay Off for Users!

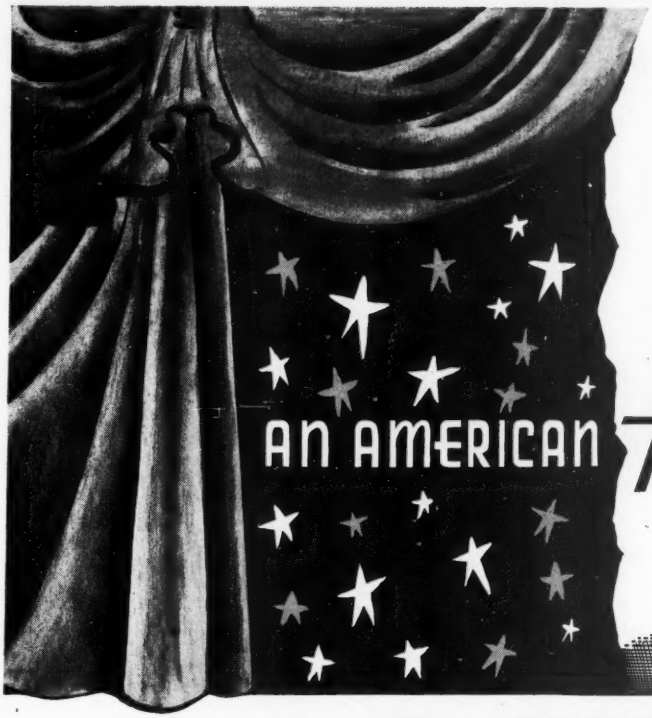
FOR drills to fit your needs—for top performance on any portable drilling job—it pays to check Black & Decker *first!* That's because Black & Decker gives you an unmatched choice of Drill models. Capacities from ¼" to 1¼"—choice of handle arrangement for easiest operation—choice of speed, power and price in most capacities. And it's also because Black & Decker Drills give you powerful B&D-built motors—full ball-bearing construction—extra-tough gears, shafts and chuck spindles—husky housings, streamlined design, perfect balance.

Whether your problem is in production, maintenance or construction—whether it requires large or small drills—see your nearby B&D Distributor *first* for expert help. And write today for free, detailed catalog to: THE BLACK & DECKER MFG. CO., 620 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS EVERYWHERE SELL

B&D Black & Decker PORTABLE ELECTRIC TOOLS

WORLD'S LARGEST, MOST COMPLETE LINE



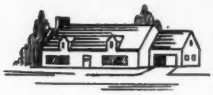
Heritage

PROFITABLE TO EVERYONE

ORE DEVELOPMENT AND RESEARCH: — Since 1850, the Cliffs Organization has kept abreast of the latest methods of ore mining, development and research. Sound business principles and firm public relations dictate such a program of responsibility, not only to Cliffs employees, but to the Nation itself.

EDUCATION: — It has been the policy of this Company to further the education of the many generations of our personnel. Good schools, well maintained, are a prime asset.

MEDICAL DEVELOPMENT: — Hospitals and health centers are important to community welfare and to individual morale. Installations of this type are available wherever Cliffs Ores are mined.



HOME OWNERSHIP: — Two words that eloquently speak for themselves. They stand for security, independence and personal satisfaction. We have been largely helpful in aiding many Cliffs families in acquiring their own homes.

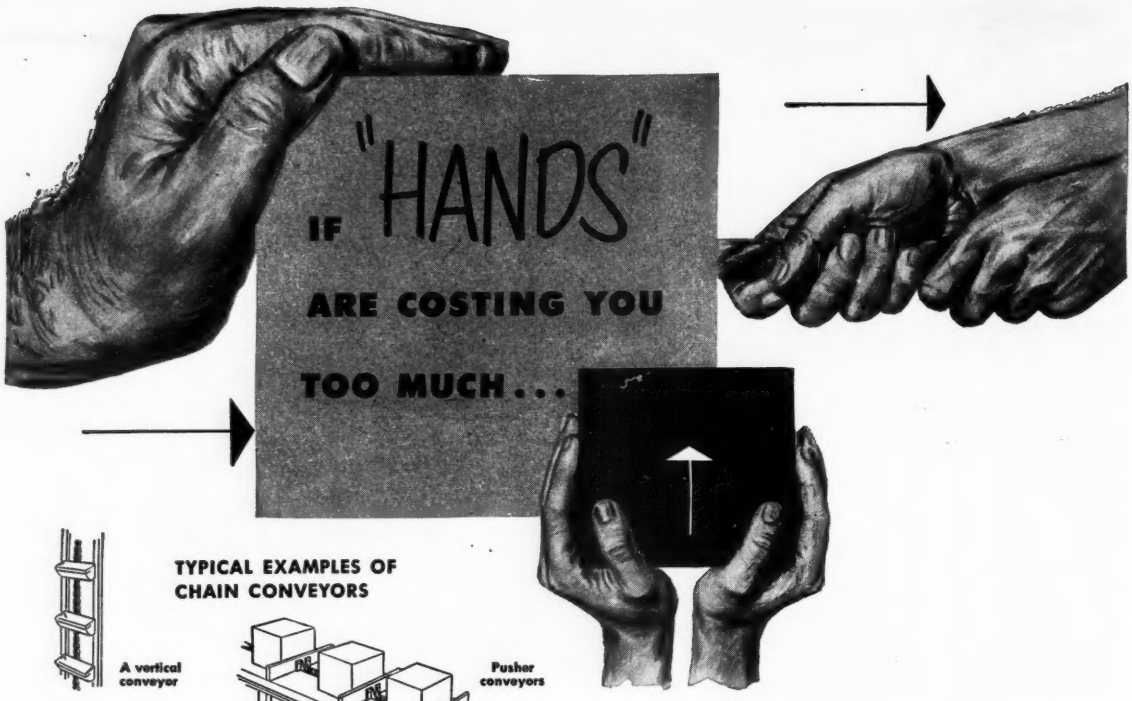
CCC

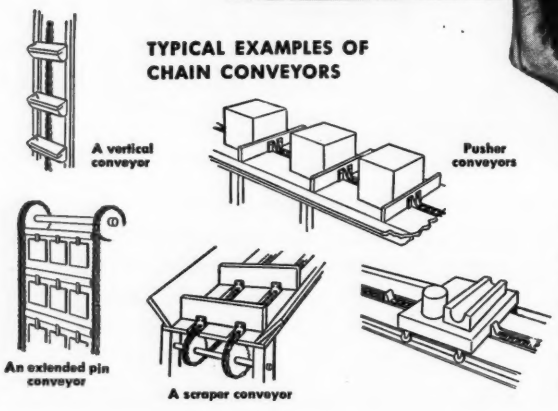
THE CLIFFS FLEET: — The officers and men who sail the Cliffs Ships are prideful of the important part they play in the transportation of Cliffs Ores and Cliffs Coals.

IRON ORE ★ ALLOYS ★ VESSEL TRANSPORTATION ★ COAL

The Cleveland-Cliffs Iron Company

UNION COMMERCE BUILDING • CLEVELAND 14, OHIO





No matter how modern your production equipment may be, old-fashioned hand "push-pull-carry" methods of moving materials can keep your operating costs high!

To obtain all the benefits of mechanized production, take the "hand" out of handling with Rex and Baldwin-Rex Chain Conveyors. These efficient materials movers can help you increase production, lower costs, raise profits, better working conditions.

Chain conveyors offer you many advantages. They can run in any direction . . . horizontally, vertically, up and down inclines. They can operate at floor level or at any desired working height. They can carry virtually any type of product through practically every production stage faster . . . at far lower costs than manual handling. They can pace your production operations . . . assure a steady flow of material for the production or processing lines. And, because of this, they eliminate the need for stock piles at machines . . . eliminate costly "waiting time" at the operator level.

Chain conveyors eliminate need for wide aisles . . . assure most effective use of floor space. They eliminate need for storage space, high maintenance and service costs required by other types of handling equipment.

For some helpful suggestions on the use and cost-reduction possibilities of chain conveyors, send for your copy of the informative booklet, "Build Profits by Cutting Handling Costs." Address: Chain Belt Company, 4660 West Greenfield Ave., Milwaukee 1, Wisconsin.

REX
BALDWIN-REX®

Chain Belt COMPANY
OF MILWAUKEE

Atlanta • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland
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Mass. • St. Louis • Salt Lake City • San Francisco • Seattle • Tulsa • Worcester

Yale & Towne saved almost 5¢ a pound

ON THIS EXTRUDED PADLOCK SHAPE

Saving metal and machining time by using an extruded brass shape isn't exactly news. But this was a little different . . . Yale & Towne, a large consumer of Anaconda Metals, was already using an extruded shape for its line of solid brass pin-tumbler padlocks . . . and paying an extra 4.8¢ a pound for a finish-draw operation.

Our Extrusion Department thought a die could be designed to eliminate the extra draw, retaining the exacting dimensional tolerances and surface finish. It worked. Beautifully! And in case you're interested in dollars-and-cents savings, so far the number of pounds of this shape supplied runs into a stout six figures!

You'll find, too, that quality goes up while costs come down when you switch to extruded shapes, because extruded metal is *wrought* metal . . . tough, strong, dense-grained, smooth-surfaced and easy to machine. Anaconda Extruded Shapes are available in long mill lengths; in copper, brass, bronze and nickel silver. We'll be glad to make suggestions based on your sketch or sample. Address The American Brass Company, General Offices, Waterbury 20, Connecticut.

Here is shown the Anaconda Extruded Shape from which padlock body blanks are sawed. Views above indicate the extent of machining necessary in the Yale & Towne Solid Brass Pin-Tumbler Padlock.

Five of the dozen-odd Anaconda Extruded Shapes used by Yale & Towne to build lasting dependability into its top-quality, moderately-priced products.

ANACONDA

EXTRUDED SHAPES

a short-cut to a finished product

Formbrite reports on its First Birthday

. . . and already proves a big help in Yale & Towne's polishing room

Just about a year ago a newcomer to the family of Anaconda Metals was announced to the trade—Formbrite* Drawing Brass—a metal with a superfine grain structure that permits polishing to a more lustrous finish in far less time than ordinarily possible.

In the form of sheet or strip, Formbrite is stronger, "springier," harder and more resistant to scratching and abrasion—yet is so ductile that it readily withstands deep-forming operations and takes clean-cut die impressions.

Illustrated here are several doorknob components made of Formbrite by Yale & Towne, one of the nation's most important manufacturers of builders' hardware. These parts are brought to a high finish on automatic polishing machines, then are lacquered or chromium plated.

In the short space of a year The American Brass Company has produced millions of pounds of Formbrite which was fabricated by leading manufacturers into a wide variety of products. Each, in substance, makes the same report: "substantial savings in our polishing operations."

Formbrite is produced, at no increase in price, in the form of sheet and strip for pressroom work; also in rod and wire for cold heading operations. Write for Publication B-39, addressing The American Brass Company, General Offices, Waterbury 20, Connecticut.

*Reg. U.S. Pat. Off.

5293

In the bullseye is shown one type of Yale & Towne doorknob assembly. Above are several of the progressive steps in producing the knob shank (note the extent of metal deformation at the deep recess). Knob, at right, receives one draw and is chamfered on the edge. Knob is formed and assembled to shank in one press stroke. Shank, knob and rose at left are made of Formbrite—the metal that helps polish itself.

Formbrite Drawing Brass is an

ANACONDA
PRODUCT

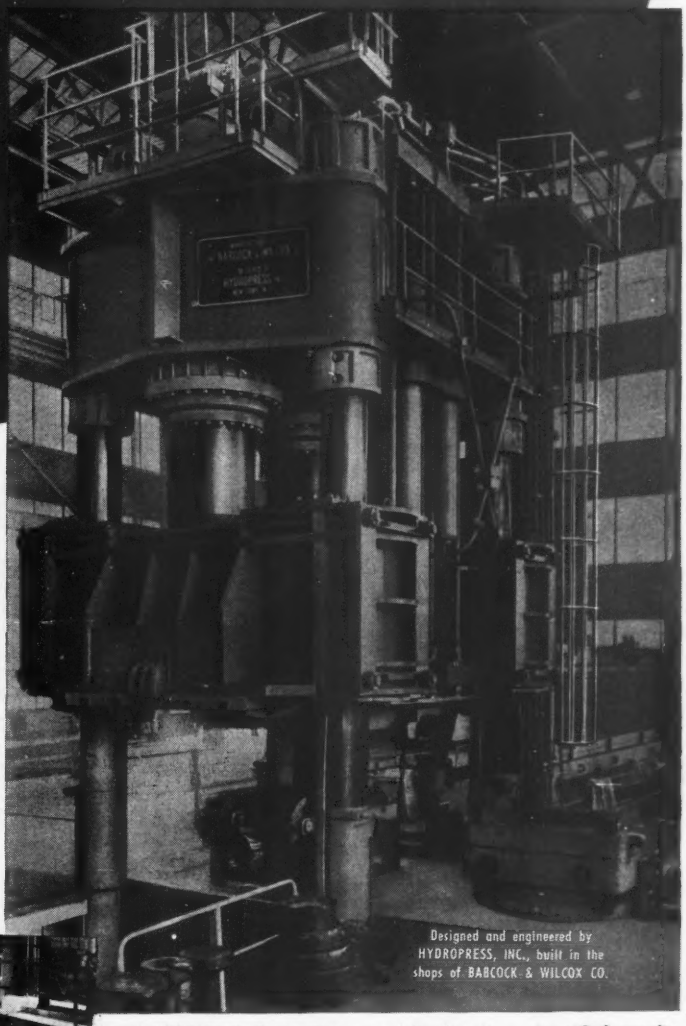
made by THE AMERICAN BRASS COMPANY

"the nation's largest press for forming boiler drum plate and the introduction into America of a method of forming heavy-wall hollow forgings by piercing and drawing an ingot . . ."

-- says BABCOCK & WILCOX for whom HYDROPRESS, INC. designed and engineered it

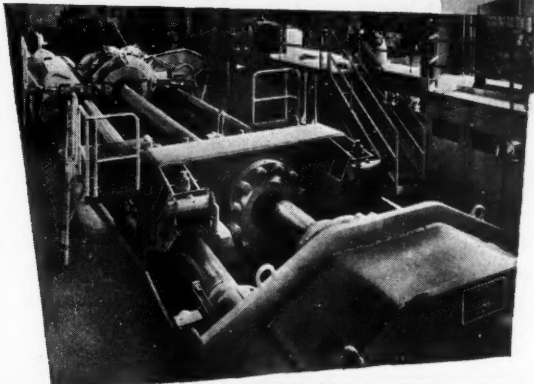
a Multi-Purpose Press for

- Forming the heaviest Steel Plate ever rolled up to max. 42 feet length and 6" wall thickness into Boiler Drum Sections.
- Piercing heated Steel Ingots for subsequent drawing of Seamless Steel Tubes and Hollow Vessels for high-pressure steam lines.
- Easily convertible to the forming of heavy pressure vessel heads, warped sections and general purpose presswork such as upsetting, reducing, expanding, cold drawing, etc.



Designed and engineered by HYDROPRESS, INC., built in the shops of BABCOCK & WILCOX CO.

▲ 6,500 Ton Hydraulic Piercing and Bending Press — intensified capacity 8,500 Ton — at the Boiler Division, BABCOCK & WILCOX, Barberton, Ohio.



▲ HYDROPRESS, INC., also designed and engineered the Hydraulic Push Bench — largest in America for this purpose — on which BABCOCK & WILCOX draws the Ingots or billets of varying cross sections — pierced on the press shown above — into seamless Steel Tube and High Pressure Vessels from a minimum of 8" I.D. up to max. 26" I. D., 4½" Wall Thickness and 22 feet length.

LOEWY

HYDROPRESS INC

ENGINEERS • CONTRACTORS

Rolling Mills • Hydraulic Presses • Pipe Testing Machines • Special Pipe Mill Equipment • Accumulators • Pumps • Die Casting Machines

350-A Fifth Avenue (Empire State Building) NEW YORK 1, N. Y.

BIRMINGHAM • CHICAGO • CLEVELAND • DETROIT • LOS ANGELES • PHOENIX • SAN FRANCISCO • SEATTLE • WASHINGTON, D. C. • WHEELING

GENOA, ITALY • LONDON, ENGLAND • MADRID, SPAIN • PARIS, FRANCE • PHILIPPINE ISLANDS

*Overcured Sections — present every 30′ to 40′ in all belts made by the flat press method. Only Rotocuring (continuous, non-stop curing) eliminates this major cause of belt failures.

Here Lies a Good Conveyor Belt ...killed by OCS*

—BWH ROTOCURE prevents these fatalities — look for it in the belts you buy

Press overlaps, inherent in belts cured by flat press methods, are a primary cause of early belt failure. The overlaps result in overcured segments 2″ to 4″ wide across the entire belt because vulcanization is *not* continuous. These 2″ to 4″ segments are *double cured* — and *double curing weakens the structure!*

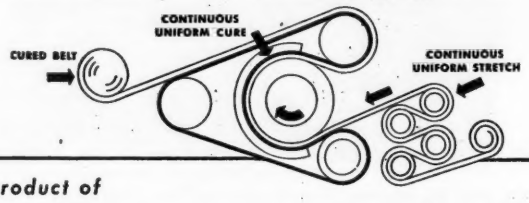
When you buy a BWH conveyor belt made by the *continuous* ROTOCURE process of vulcanization you obtain a *uniformly strong* belt *overall.* The weakened segments due to overlapping that sabotage operations and inflate belting costs are completely eliminated. With continuous, endless vulcanization you'll be ahead four ways:

1. In increased belt flex life — as much as 40%
2. In elimination of mechanical distortion at the press ends
3. In constant, uniform stretch
4. In uniform, abrasion-resistant covers

These characteristics of BWH Conveyor Belts mean minimum belt maintenance costs, longer belt life and appreciable per ton savings in the cost of what you convey! Ask your BWH distributor to show you how these highly serviceable belts can help you. Or write us direct.**

**Ask him also about BWH Rotocured Transmission Belts. Because they permit operation at lower tensions, you are assured of longest possible belt life.

DIAGRAMMATIC SKETCH OF EXCLUSIVE ROTOCURE PROCESS



BWH DEPENDABLE RUGGEDNESS

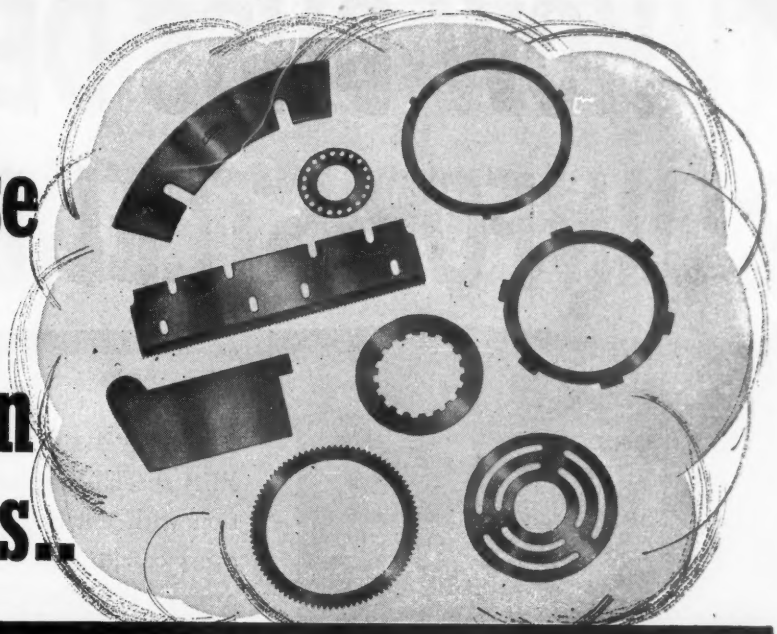
Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

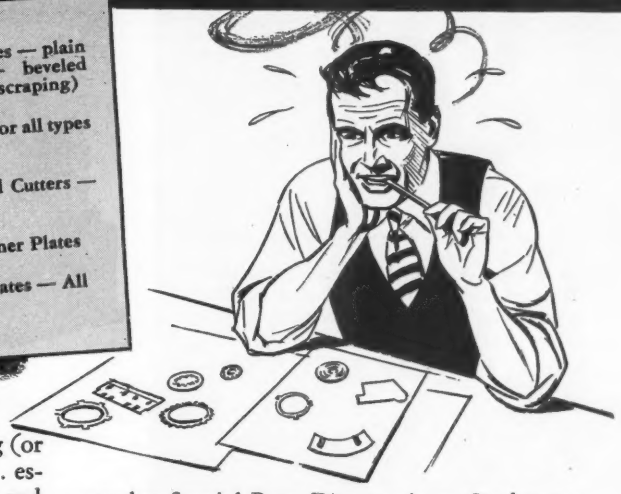
PLANT: CAMBRIDGE, MASS. • P.O. BOX 1071, BOSTON 3, MASS., U. S. A.
WAREHOUSE STOCK, 111 NORTH CANAL ST., CHICAGO, ILLINOIS

If Parts Like These are Production Headaches..



...then make SIMONDS Special Parts Division part of your own production line!

Heat Treated Discs — all types	Blades — All types — plain — toothed — beveled (For cutting or scraping)
Valve Discs (Compressors)	Circular Cutters for all types of cutting
Clutch Discs (Multiple Disc Type)	Irregular Shaped Cutters — All types
Aircraft Engine Discs	Heat Treated Liner Plates
Machine Parts (Flat Steel)	Rectangular Plates — All types
Wear Plates (Ways, etc.)	



If you're having difficulty manufacturing (or obtaining) any *FLAT STEEL PARTS* . . . especially parts that require heat treating and grinding . . . then here's your headache powder

Simonds Special Parts Division can be your production line for these parts . . , raw steel from Simonds Steel Mill in Lockport, N. Y., fabricated into your part at Simonds Famous Windowless Plant in Fitchburg, Mass.

Simonds Special Parts Division is fully equipped to produce precision parts for aircraft engines, printing presses, slitting machines, air compressors and numerous other applications. Clutch discs for coal handling equipment, machine tools, marine transmissions, etc., is another Special Parts Division item. Send your inquiries, with full specifications or blueprints, direct to Simonds Special Parts Division, Fitchburg, Massachusetts.

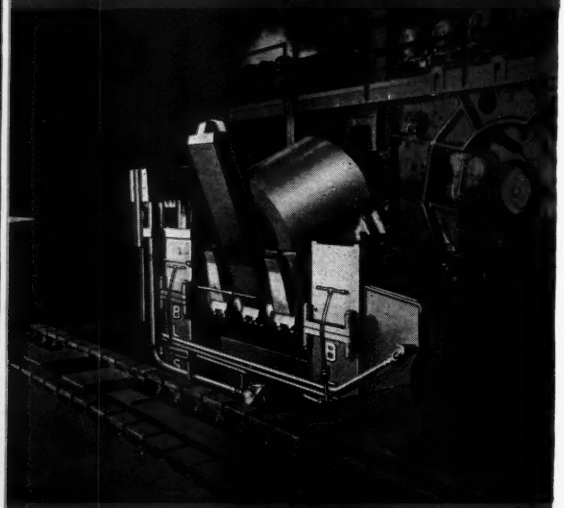
SIMONDS
SAW AND STEEL CO.
FITCHBURG, MASS.

Factory Branches in Boston, Chicago, San Francisco and Portland, Oregon. Canadian Factory in Montreal, Que. Southern Service Shop in Meridian, Miss. (formerly J. H. Miver Saw Mfg. Co.). Simonds Divisions: Simonds Steel Mill. Lockport, N. Y., Simonds Abrasive Co., Phila., Pa. and Arvida, Que., Canada

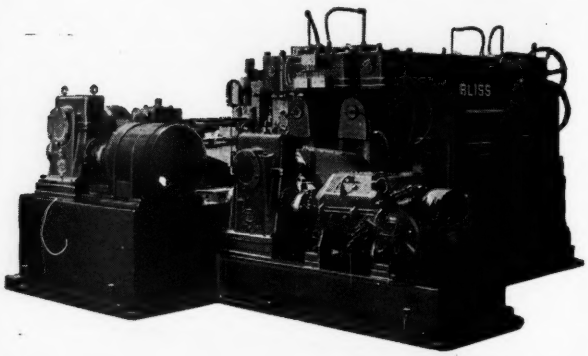
HOW BLISS DESIGNS FOR STEEL, BRASS

PRIMARY METAL PLANTS use hundreds of Bliss special-purpose machines in conjunction with hot and cold reduction mills. In every case, backed by field research with industry's engineers, Bliss has drawn upon its engineering skills to create equipment combining the necessary ruggedness and precision for the job at hand.

Pictured on these pages are typical exam-

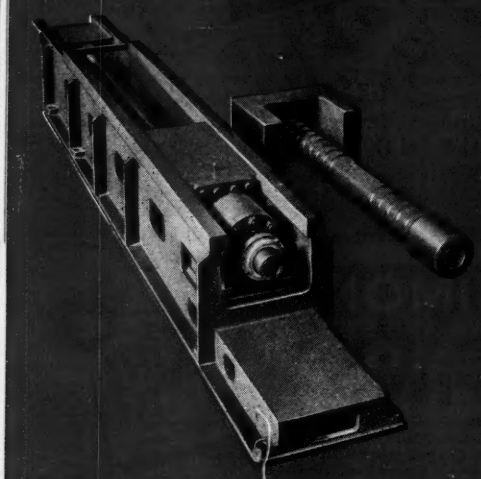


COIL UPENDER strips hot 25,000-pound coils from the Mandrel Coiler, upends and deposits them on a "waffle top," which in turn deposits coils on the moving conveyor strands without damage to coil edges.



13 ROLL BREAKER produces scale-free and inclusion-free product which is suited for final reduction operations.

RUN OUT DELIVERY TABLE specially designed by Bliss has slab sweep-off sections opposite piler. A slab pusher is provided on one side.



ROLL CHANGER WITH SLIDING RAIL permits easy roll removal from the mill and reduces required crane capacity. Balance bar is used to handle work roll assemblies including chocks and bearings.

AUXILIARY EQUIPMENT AND ALUMINUM MILLS

ples of mill accessory equipment designed by Bliss. The complete range is described and illustrated in a new 52-page brochure soon to be published. You can reserve your copy now.

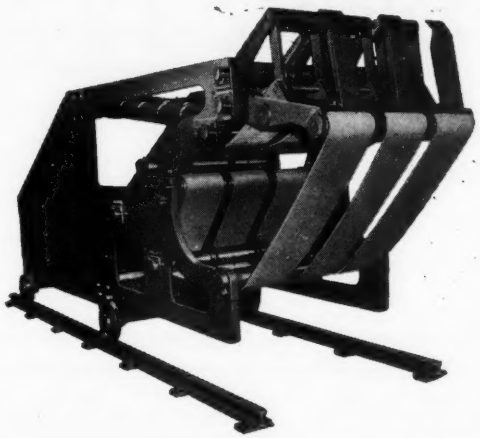
Next time you need auxiliary mill equipment, call in Bliss engineers.

E. W. BLISS COMPANY, General Office: Canton, Ohio
ROLLING MILL DIVISION: SALEM, OHIO

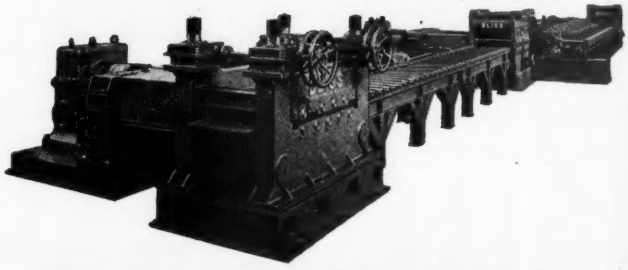
E. W. Bliss (England) Ltd., Derby, England

E. W. Bliss Company (Paris), St. Ouen sur Seine, France

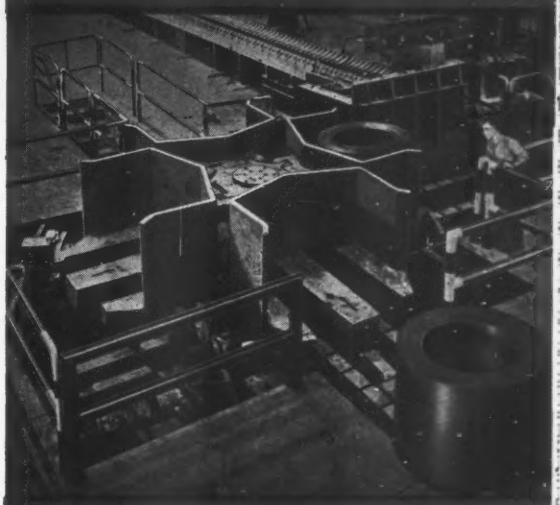
PRESSES, ROLLING MILLS, SPECIAL MACHINERY



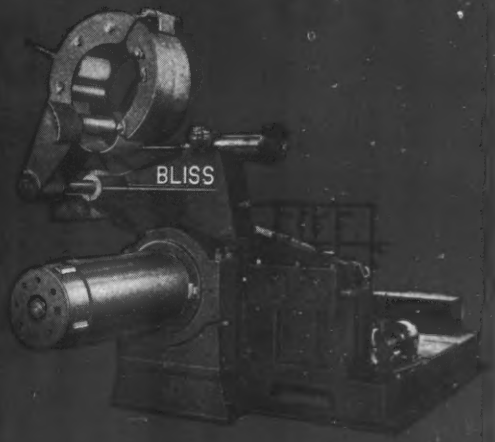
WIDE HORIZONTAL-TYPE BELT WRAPPER **is used in conjunction with Tension Reel to coil strip on the fly into tight, uniformly wound coils.**



COMBINATION LEVELER AND SLAB MILLER **levels the slab, mills one side, turns the bar over and mills the other side. It is used in brass and aluminum mills to prepare metal for final cold reduction.**



COIL LIFT AND TURN-AROUND UNIT [illegible] coils weighing up to 10,000 pounds from one leg of conveyor to another. It operates at either 90° or 180°. Packed coil edges are retained.



TENSION REEL AND BELT WRAPPER handles 10,000-pound coils. Forced-circulation oil lubrication pump and piping are shown clearly on the typical Bliss gear reduction unit.

SMASH!

Swinging with perfect coordination, a top tennis player "kills" the ball as easy as you please.

A Champ Makes it Look Easy

All it takes to be a champion athlete is muscle, speed, know-how . . . and Coordination, with a Capital "C!"

Ask any champ. Or ask us. We know. Coordination is something we've *got* to know about, in the steel business.

Making steel is complicated enough in ordinary times, and today we're going "all out" to make the kinds and qualities of steel you want, and still fulfill military requirements and government allocations. Under somewhat trying circumstances.

That's why coordination between departments is our No. 1 Rule here at Wisconsin Steel. It enables us to make only promises we can keep, and keep any promises we make. It means that when we take an order, you can count on delivery. Which is something to consider, next time you order steel.

INTERNATIONAL HARVESTER

WISCONSIN STEEL COMPANY, affiliate of INTERNATIONAL HARVESTER COMPANY
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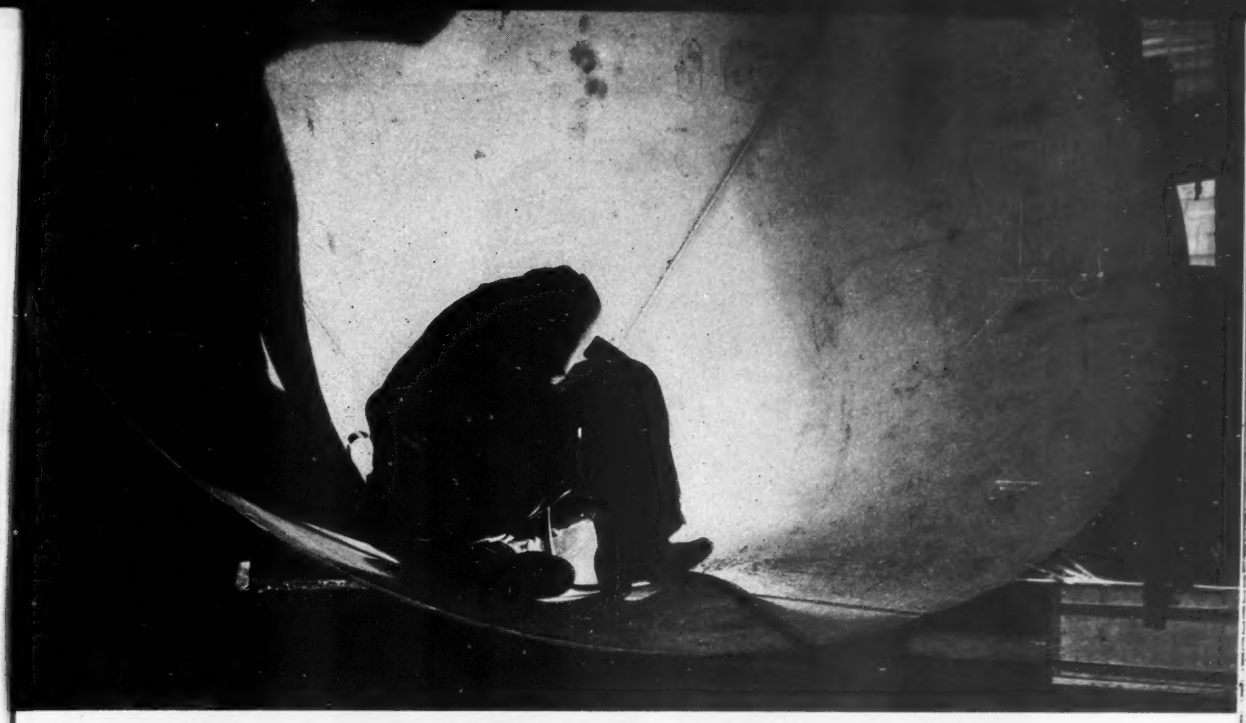
WISCONSIN STEEL



A STABLE ARC, GOOD DIRECTIONAL CONTROL, AND WIDE USEABILITY CHARACTERISTICS ENABLE YOU TO . . .

Weld Stainless Easily in ALL Positions with G-E Stainless Steel Electrodes

36 TYPES ASSURE YOU OF THE RIGHT ELECTRODE FOR EVERY JOB

You get the most for your dollar when you buy General Electric stainless steel electrodes. Here are seven reasons why:

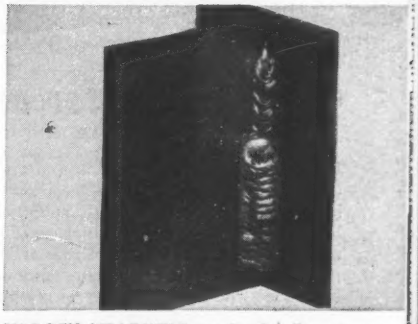
1. You get excellent handling characteristics in *all positions*.
2. You get good directional control because G-E stainless steel electrodes give you a very stable arc.
3. You get the minimum of spatter and can remove slag easily.
4. You can select the correct electrode for every application because G.E. offers industry a complete line of chrome and chrome-nickel types.
5. You can get G-E stainless steel lime-coated electrodes for reverse polarity DC and titania-coated rods for AC and reverse polarity DC.
6. You get the correct metallurgical deposit your specific job requires.
7. You get excellent physical properties in the bead itself.

See Your G-E Welding Distributor!

He can help you select the best, most economical electrode for your specific stainless steel welding job.

Your G-E welding distributor also carries a complete line of other electrodes, accessories, AC, DC, Inert-Arc and Atomic Hydrogen welders. You can find his name by looking for General Electric under "Welding Equipment" in the classified pages of your telephone directory. *General Electric Co., Schenectady 5, N. Y.*

712-19



SMOOTH, NEAT WELD made with lime type W-1310, reverse polarity DC electrode.

VERTICAL FILLET weld made with W-2310, titania type, AC or DC reverse polarity.

GENERAL ELECTRIC

Contact man for an organization serving you

In Los Angeles his name is Joe, in Cleveland it's Harvey. Like his "brothers" in principal cities throughout the country, he is *your* key to lower steel inventories, more helpful information, *complete assistance* in the use of tool, alloy, or stainless steel. He's the fellow on the telephone order desk at your nearest Carpenter MILL-BRANCH WAREHOUSE.

The first time you call him, you'll discover you're getting something *more* than "just steel service". For he is backed by a MILL-BRANCH WAREHOUSE organization. It embraces "trouble-shooting service" right in your own plant. It is backed by trained delivery crews and modern equipment to process orders, fast.

Most important—it is *part and parcel* of the specialty Mill in Reading. Every time you call your Carpenter MILL-BRANCH WAREHOUSE you benefit from Mill Laboratory and Metallurgical Help, Mill Quality Controls—*comprehensive Mill Service.*

Truly, it's almost like having a *specialty* steel Mill right next to your receiving dock!

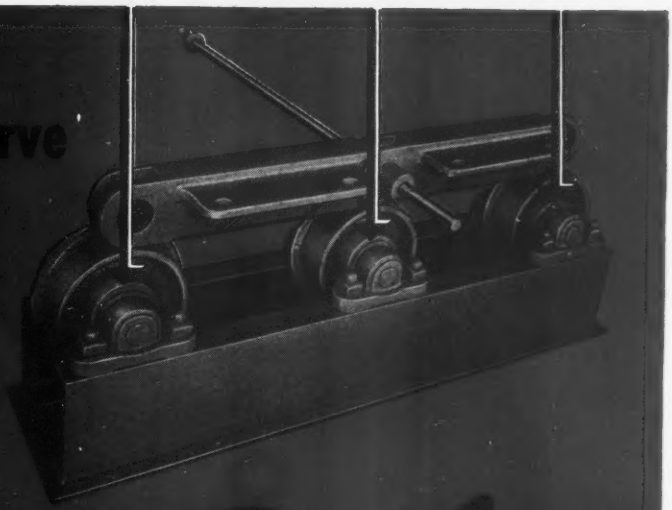
Whenever you want specific job recommendations, help with a problem or top-quality steel, get it by calling Carpenter. Try it and see. Simply pick up your phone and talk to the man on the order desk at your nearest Carpenter MILL-BRANCH WAREHOUSE or Distributor. The Carpenter Steel Co., 139 W. Bern St., Reading, Pa.

CALL *Carpenter*

for Mill-Branch Warehouse Service

SPECIALTY TOOL • ALLOY • AND • STAINLESS STEELS

These Wheels Serve You Best by STANDING STILL



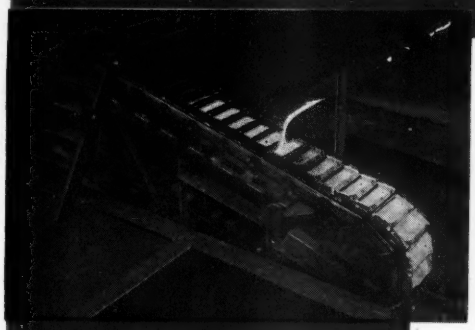
Bailey

STATIONARY WHEEL PIG CASTING MACHINES

Correctly designed for greater production . . . longer service

Increased casting capacity, reduced maintenance and operation costs—these are your benefits from the "stationary wheel" design of Bailey Pig Casting Machines. Bailey Machines feature large diameter idler wheels permanently mounted at intervals on the frame. Along these stationary flanged wheels runs an endless chain of moulds. Through this design 80% of the moving parts of conventional machines are eliminated, and the wheels are located as far as possible from casting heat.

Rugged in design and construction, Bailey Pig Casting Machines have been thoroughly proved by service in ferrous and non-ferrous smelters and foundries.



Foundry Type

Completely self-contained, the complete unit includes the machine proper, motor gear unit, variable speed reducer and drive. Only an electrical connection is required for operation. Capacities 3 to 50 tons. Sizes 15 to 125 feet in multiples of 5 feet.

Blast Furnace Type

For heavy duty pig casting this machine is built in sizes from 125 to 250 feet long, supplied with either single or double strand, to cast over 10 inch diameter idler wheels which assure smooth operation at all speeds. Stationary wheel design assures lower power demands, simplified fabrication of the idler wheels, and no vibration while the pig is solidifying.

Bailey ENGINEERS

1221 BANKSVILLE ROAD PITTSBURGH 16, PA

More BALED Scrap

Means More Iron and Steel for You...NOW and in the Future!

How much sheet metal scrap is your plant generating? *How fast* is it finding its way back to the mills, furnaces and foundries in the form of dense, compact bales for the production of new steel and iron?

If you are baling your sheet metal scrap . . . and salvaging your heavy scrap . . . you are helping iron and steel production keep pace with defense and civilian requirements. Keep your scrap baling equipment operating at top capacity . . . and *plan now* to expand and modernize your baling operations to meet future needs.

Galland-Henning offers you competent counsel on your baling problems, based on years of experience in the design, construction and installation of powerful, hydraulic scrap metal balers for steel mills, industrial plants and scrap yards.

GALLAND-HENNING MANUFACTURING CO.
2747 S. 31st ST., MILWAUKEE 46, WIS.

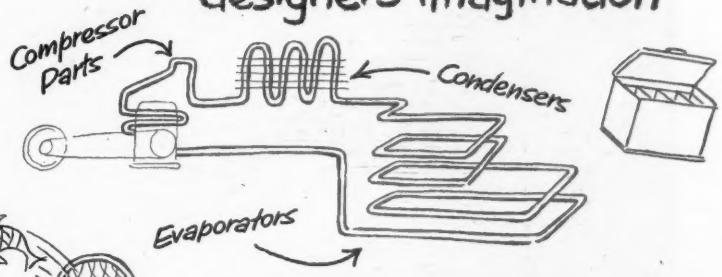
GALLAND-HENNING

SCRAP METAL BALING PRESSES

A 5975-1P

Bundyweld "Doodles"

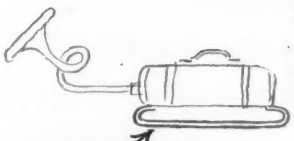
to jog a designer's imagination

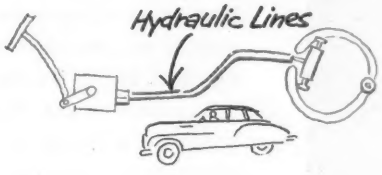


Working out a new part design? Then why not let Bundyweld Tubing and Bundy engineering skills help you get better-functioning parts, faster fabrication, lowered costs?

Bundyweld performance qualities make it practical for a wide choice of applications. And, with their tested experience in designing and fabricating tubing parts, Bundy engineers can often point out ways to save you time, material, money. Write for a catalog today.

Bundy Tubing Company, Detroit 14, Michigan





Bundyweld® Tubing

DOUBLE-WALLED FROM A SINGLE STRIP

Leakproof
High thermal conductivity
High bursting point
High endurance limit
Extra-strong
Shock-resistant
Ductile

Lightweight
Machines easily
Takes plastic coating
Scale-free
Bright and clean
No inside bead
Uniform I.D., O.D.

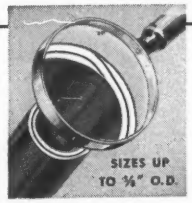
WHY BUNDYWELD IS BETTER TUBING

Bundyweld starts as a single strip of copper-coated steel. Then it's . . .

continuously rolled twice around laterally into a tube of uniform thickness, and

passed through a furnace. Copper coating fuses with steel. Result . . .

Bundyweld, double-walled and brazed through 360° of wall contact.

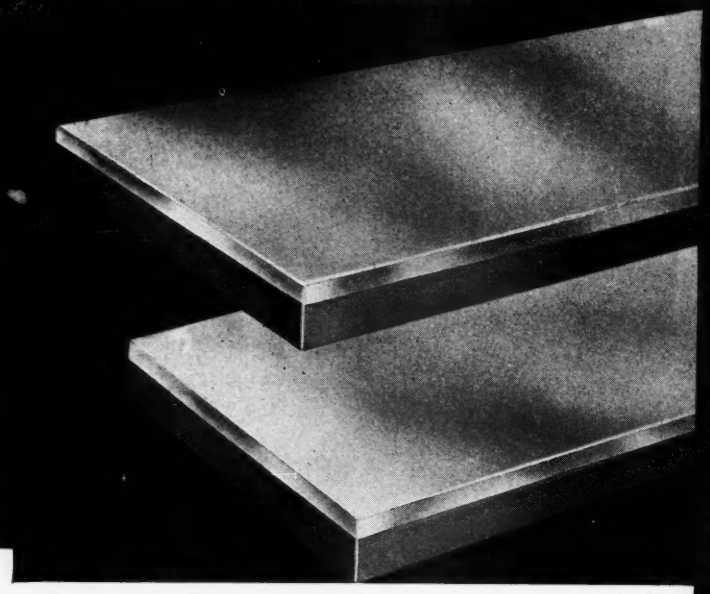


←

NOTE the exclusive patented Bundyweld beveled edges, which afford a smoother joint, absence of bead and less chance for any leakage.

Bundy Tubing Distributors and Representatives: ***Cambridge, 42, Mass.:*** Austin-Hastings Co., Inc., 226 Binney St. • ***Chattanooga 2, Tenn.:*** Peirson-Deakins Co., 823-824 Chattanooga Bank Bldg. • ***Chicago 32, Ill.:*** Lapham Hickey Co., 3333 W. 47th Place • ***Elizabeth, New Jersey:*** A. B. Murray Co., Inc., Post Office Box 476 • ***Philadelphia 3, Penn.:*** Rutan & Co., 1717 Sansom St. • ***San Francisco 10, Calif.:*** Pacific Metals Co., Ltd., 3100 19th St. • ***Seattle 4, Wash.:*** Eagle Metals Co., 4755 First Ave. South ***Toronto, Ontario, Canada:*** Alloy Metal Sales, Ltd., 181 Fleet St., E. • Bundyweld nickel and Monel tubing is sold by distributors of nickel and nickel alloys in principal cities.

CF&I STAINLESS-CLAD PLATES



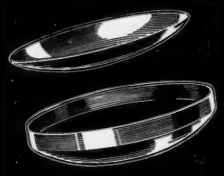
stainless steel advantages
... with carbon steel strength
... at lower cost

If you use stainless steel in your fabrication or construction, chances are you can lower your material costs substantially by means of C F & I Stainless-Clad Plates.

In numerous and diversified applications, these plates are giving all the advantages of stainless steel, including prolonged resistance to the corrosive action of acids and alkalis.

C F & I Stainless-Clad Plates are a composite of stainless steel permanently bonded to a carbon steel backing. Easy to fabricate, they will not buckle, crack or peel under the severest forming operations. To order, write or call Claymont Steel Products, Wickwire Spencer Steel Division, Claymont, Delaware.

THE COLORADO FUEL AND IRON CORPORATION—Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION—Oakland, California
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo
Chicago • Detroit • New York • Philadelphia



Flanged and Dished Heads

Carbon and Alloy Steel Plates

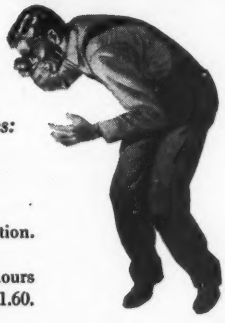
Large diameter steel pipe

CLAYMONT STEEL PRODUCTS
WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION
CF&I

1280

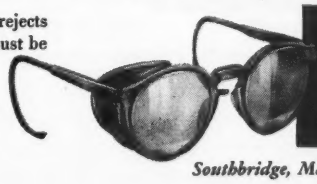
Short or Long Term CAPITAL LOSS?

No matter how they are figured—
eye accidents are costly to industry.
Here are some of the estimated charges:



1. They cost nearly $400 in average compensation.
2. They cost $176,000,000 in lost man hours annually at an average per hour rate of $1.60.
3. They cost an unknown but sizeable sum in idle machine time. (Remember, industry invests $6,000 or more in tools to provide each job.)
4. They cost another appreciable sum in impaired worker morale.
5. They cost additional money in increased rejects and lowered output when green workers must be substituted for skilled.
6. They cost money in first aid and medical attention whether the eye injury is major or minor.

Any industrial eye accident is a capital loss. If you lose the skill of a valued worker through the loss of an eye, you have a long-term capital loss in a very real sense—with no gain, long or short, to compensate. Contact your nearest AO Branch Office and learn how an AO Eye Protection Program can practically eliminate these costs and pay for itself in less than six months. Or write American Optical Company, 439 Vision Park, for free booklet "Improved Industrial Vision" which tells how AO's Industrial Vision Program cuts costs, increases production, decreases accidents.



American Optical
COMPANY
SAFETY PRODUCTS DIVISION

Southbridge, Massachusetts • Branches in Principal Cities

P&H OVERHEAD CRANES

Hold us COMPLETELY RESPONSIBLE!

P&H is the only crane builder producing complete electrical equipment for overhead cranes. P&H electric motors are designed specifically for crane service — for frequent reversal, with ample safety factor. P&H crane controls are designed for a single purpose — to insure the perfectly coordinated performance to meet your job requirements — and keep it that way! When you specify P&H crane electrical equipment, you can look to this one dependable source for complete service. There are no delays — no buck-passing. P&H — America's leading crane builder — welcomes this complete responsibility!

P&H Magnetorque* AC control is the greatest crane improvement in 20 years. Ask about it!

*T.M. of Harnischfeger Corporation for electro-magnetic type brake.

P&H OVERHEAD CRANE DIVISION

HARNISCHFEGER CORPORATION

4411 WEST NATIONAL AVENUE • MILWAUKEE 46, WIS.

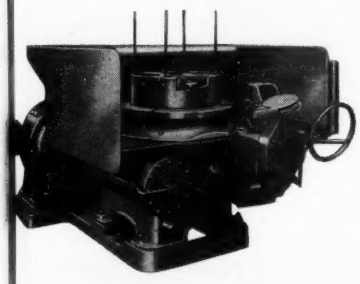
Over 17,000 P&H cranes serve American Industry — far more than any other.

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES

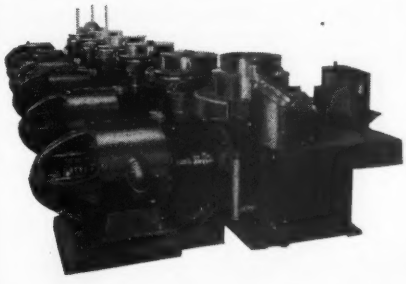
From the finest wire →

to the largest bar

VAUGHN® Cold Drawing Equipment



MOTOBLOC®



MOTOBLOX®

RINGBLOX®

CONTINUOUS MACHINES

DRAWBENCHES

V®

Whatever your cold-drawing requirements call for in production, you can be sure of finding Vaughn Machines that are *right* in type, size and capacity to do the job best, at lowest cost. Let our broad experience assist your planning—now!

"Quick on the Draw"

THE VAUGHN MACHINERY CO.

Cuyahoga Falls, Ohio, U.S.A.

COMPLETE COLD DRAWING EQUIPMENT . . . Continuous or Single Hole . . . for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys.

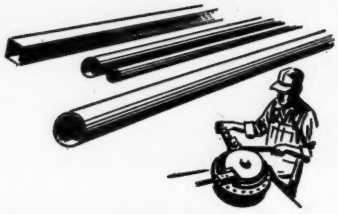
RYERSON

The Industrial P. A.'s Department Store

Here are a few of the many types of steel and related products on hand right now, ready for immediate shipment from your nearby Ryerson plant. Many may be used in place of products that are still hard to get. Check the items you need, and save time by ordering them next time you call Ryerson.

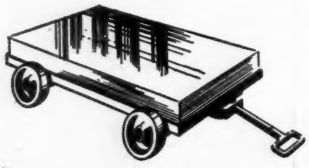
ALLOYS

Tested alloys of known hardenability, both standard and aircraft quality. Complete heat treatment guide with each shipment.



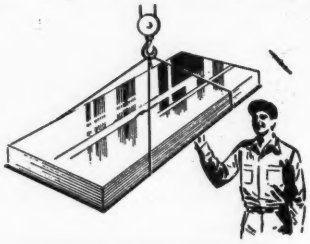
WELDED MECHANICAL TUBING

Hot and cold rolled, rounds and squares in a wide range of sizes. Consider cost. Substitute for seamless tubing.



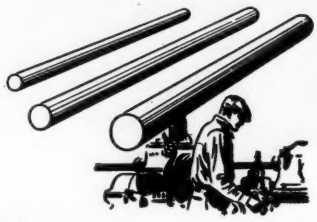
CARBON SHEETS

Both hot and cold rolled coming into better supply, especially cold rolled in the heavier gauges.



STRAIGHT CHROME STAINLESS

No allotment required for these stainless bars, plates and sheets—and they can often replace restricted nickel-bearing types.

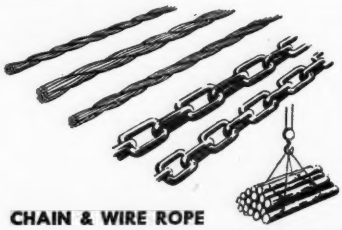


TOOL STEEL

Water, oil or air hardening steel. High in quality; economical in price. Hardening data with every shipment.

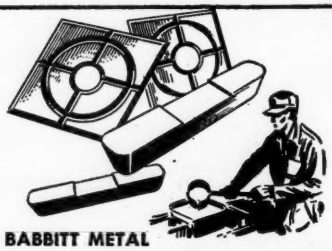
SAFETY PLATE

Strong, non-skid Inland 4-Way Safety Plate protects feet against slipping, floors against wear. Easily fabricated.



CHAIN & WIRE ROPE

Rugged, dependable TM chain, iron, steel and alloy qualities, furnished to order. High quality wire rope shipped from large stocks.



BABBITT METAL

Glyco Babbitt, an exclusive Ryerson product, has physicals equal to high tin Babbitts; costs substantially less and is unrestricted.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

September 15, 1952

Enough Aircraft?

The hot Washington debate over whether our aircraft production program is adequate constitutes just one phase of the big question—whether the general defense stretchout should be stretched out still further (p. 65). Air Force Secretary Thomas Finletter does not think aircraft production lags dangerously. Deliveries to the Air Force are now about five times the shipments before the Korean war broke out. He points out that engineering and quality requirements must be increasingly rigid. On those grounds he's one of those who advocates no design freezes or similar steps to speed production.

Fowler Wants More

Not so, Henry H. Fowler. The new defense mobilizer has long favored more military output. In his new job he'll have more weight and could help influence a defeat of the stretch-out-the-stretchout camp. The position on this matter of one important man is not yet known. That's Hugh Dean, just named special assistant to Defense Secretary Lovett in charge of production. Significantly, the routine memorandum describing his duties, which normally would have gone out promptly after his appointment, had not been issued as of late last week.

Effects of the Stretchout

An indication of the effect even the present stretchout is having can be seen from the situation in machine tools. Because of declining defense demand, the backlog of machine tool orders had dropped to such an extent that the government will clamp down on the award of federally guaranteed pool contracts. Defense tool order cancellations exceed 40 per cent of new orders. A new form, NPAF-227, is now required for pool orders. It requires more information and will allow NPA to screen requests more closely. Machine tool business will still exceed $1 billion in 1952, but the expected volume of $1.2 billion in 1953 may not be reached.

Industrial Building Slips

Another indication of the economic effect of the present stretchout can be seen in industrial construction. It amounted to about $1975 million in 1951, was scheduled to hit $2.2 billion in 1952 and then drop back to $2 billion in 1953. Current building indicates that the total will surpass $2 billion this year, but not reach $2.2 billion, and that it won't attain the $2 billion goal in 1953.

Politics Plays a Part

Economic planners, always keeping an eye on politics, are alarmed about repercussions when weaknesses begin to appear in two such vital props to the economy as capital goods production and industrial

Production-Engineering News—p. 91 *The Market Outlook—p. 173*

construction. So, odds are that the camp advocating stretching out the stretchout will lose and that even some of the present stretchout might be reversed. But it's not likely that defense obligations will ever be permitted to rise higher than about $4.7 billion a month.

Turnabout in Aluminum

In sudden recognition of the availability of aluminum in some forms, government officials are now encouraging auto and truck makers to reconvert to the light metal early next year. Chances are that aluminum will return to such applications as torque converter housings where ferrous castings have been used somewhat unwillingly. Cast aluminum pistons may be used by Chevrolet and Pontiac, and Chrysler is asking for bids on an aluminum torque converter turbine.

All-State: No Wild Success

Sears, Roebuck sales are just so-so of the All-State, the car built by Kaiser-Frazer Corp. and close in everything but name to the Henry J. Within the next two months Sears hopes to make a decision to keep up or drop the merchandising experiment. If it decides to keep on, it will demand a car different in styling from the Henry J.

More Engineers—After 1954

After a downtrend, the number of engineering students enrolling in colleges is again on the upgrade. But the number of engineering graduates will continue to drop through 1954. After that, industry can expect some improvement. Today only about 600,000 people, or 1 per cent of employed civilians, are engaged in engineering and in the biological and physical sciences.

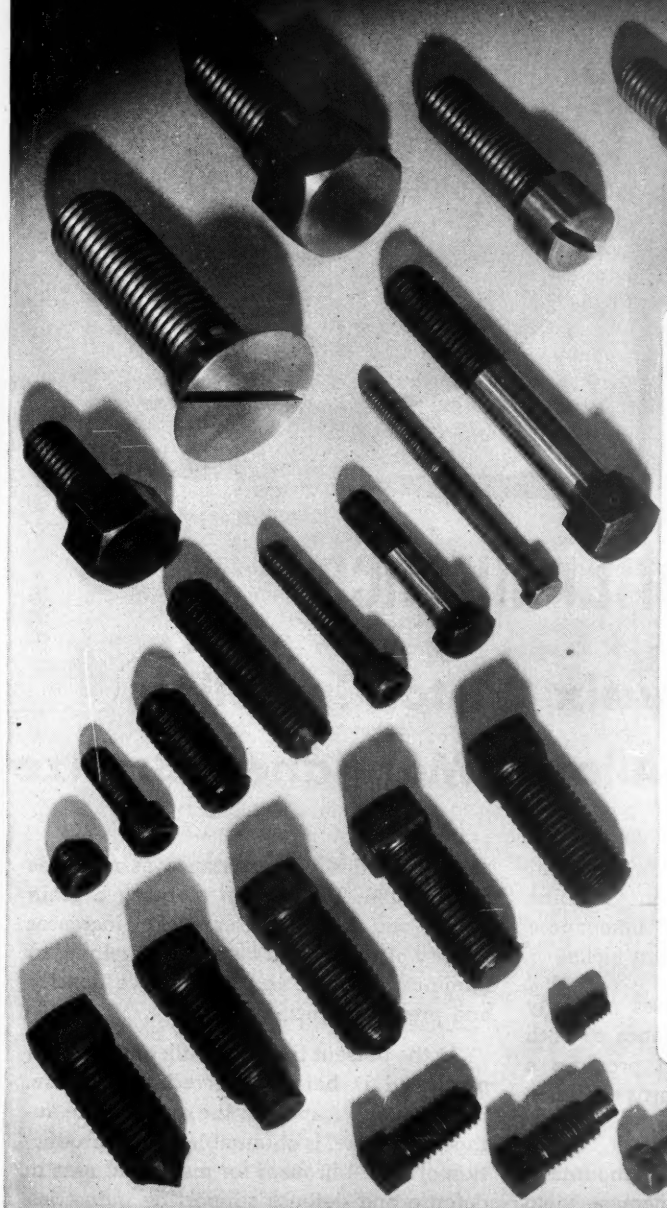
Straws in the Wind

Preliminary estimates of the total tax take by all levels of government in fiscal 1952 place it near a record $86.5 billion, 22 per cent more than 1951—and 1953 should be larger . . . Texans can begin talking about: Partial production in November from the Alcoa $100 million plant at Rockdale; a Jones & Laughlin warehouse to be started in Houston in about 90 days . . . Wage raises up to 11 per cent are authorized for all salaried workers at U. S. Steel Corp., not members of the union . . . Retroactive pay to production and maintenance employees will cost Youngstown Sheet & Tube $1.8 million in accordance with its United Steelworker contract just signed . . . Inland Steel Co. just opened the first of four new open hearths in East Chicago, Ind. . . . Preliminary figures reveal that only 618,000 tons of military steel orders were placed for October although the set asides permitted orders for 889,000 tons.

What Industry Is Doing

New pass-through order on price ceilings penalizes industries requiring a lot of manpower (p. 63) . . . U.S. and Canadian partnership for defense production is paying off (p. 64) . . . Industrial coal stocks near a 90-day supply, as the strike deadline nears (p. 66) . . . Instrument designers are taking the human error out of production (p. 67) . . . Industry can expect a better deal from either Eisenhower or Stevenson than it now has from Truman (p. 74).

UNITED
CAP SCREWS SET SCREWS



If your Cap Screw and Set Screw requirements call for "Standard" or "Off-Standard" sizes, you will find at "UNITED" a complete stock ready to serve your needs.

If your Cap Screw and Set Screw requirements call for "Special" lengths, head designs or other deviations, our facilities to meet these needs in all available metal alloys is complete in every respect.

—when you think of fasteners think of United

SCREWS · NUTS · WASHERS
CLUTCH HEAD SCREWS
STAMPINGS

United Screw and Bolt Corporation

Chicago 8 Cleveland 2 New York 7

Six giant impellers like this one, with outside diameters of 145", were produced in "Turbine Nickel-Alloyed Metal" by American Manganese Bronze Company of Philadelphia. Meeting minimum specifications of 80,000 p.s.i. tensile strength, and 20% elongation, they have been installed in 84" vertical volute, bottom suction pumps produced by Worthington Corporation, Harrison, N. J. Each pump, driven by a 22,500 H.P. motor, is designed to deliver 345,000 gallons per minute against a 197-foot head pressure. They provide water for irrigation purposes in the Central Valley Project, in California.

How a little Nickel Buys a lot of Endurance

. . . is shown by six 24-ton Impellers Cast in Nickel-Alloyed Manganese Bronze

This large casting is one of six identical 48,000-pound impellers cast in "Turbine Nickel-Alloyed Metal" . . . a manganese bronze containing 2 to 4 per cent nickel.

The nickel addition increases not only its strength but also its resistance to both erosion and corrosion. Nickel provides a tenacious surface film that retards corrosion penetration and dezincification.

Experience shows that small amounts of nickel in standard bronzes increase yield strength and shock resistance as much as 25 to 50%. In addition to being a grain refiner and alloy diffuser, nickel increases fluidity of the molten metal, thus helping to minimize misruns and to improve density and pressure-tightness.

At the present time, the bulk of the nickel produced is being diverted to defense. Through application to the appropriate authorities, nickel is obtainable for the production of nickel bronzes for many end uses in defense and defense supporting industries.

EMBLEM OF INCO SERVICE

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

Freedom Is the Answer

In connection with the celebration of the Centennial of Engineering in Chicago, Christy Borth, educational director of the Automobile Manufacturers Association, was asked by Charles Kettering to explain how developments in motordom have fitted into engineering progress of the past century.

In reply, Mr. Borth stated that he believes the essence of the remarkable developments in American automotive engineering is to be found in the answers to four questions. These are: 1. Why did the United States take the leadership in this field which initially was European? 2. Why did Detroit become the Motor City when at least six other cities seemed to have more advantages? 3. Why did gasoline, rather than steam and electricity, become the chosen power source for automobiles? 4. How, when and why did the automobile—originally a luxury—become a power plant and transport tool so essential to the American people that our economy would now collapse without it?

Mr. Borth finds no pat answers to these questions. Hard work, ingenuity, skill, courage to take risks, fortuitous accidents, and many other factors have contributed to the fact that in the 56-year history of the American automobile industry its plants have turned out over 123 million cars, trucks and busses while the remainder of the world has produced only a quarter of that number.

"Certainly no human mind or combination of human minds have planned it that way," concludes Mr. Borth. "America's God-given inalienable right to freedom is responsible."

Upon careful reflection, many will agree with Mr. Borth that many of this nation's major accomplishments sprang from the environment of freedom in which Americans have operated. Right now, when the exponents of socialism, communism and other "isms" are especially active, we who appreciate freedom should fight doubly hard to retain it.

Wednesday, Sept. 17, is Constitution Day. Reread our remarkable Constitution again and again and you will agree with Bruce and Esther Findlay, authors of "Your Rugged Constitution," that "if all of us carry out the duties of our citizenship faithfully and to the best of our ability, the rights we cherish will be forever safe."

E. L. Shaner

EDITOR-IN-CHIEF

TIME IS RUNNING OUT: In most states the regulations covering the registration of voters provide that citizens may register up to a certain date which is not too far distant. Also, there is one day or more in which the qualified voter can register in his own precinct voting booth. On other days, up to the deadline, the citizen must go to the election board in the county seat to register.

Industrial companies have responded nobly to

appeals to get into this "get-out-the-vote" drive with both feet. Their efforts to date have been productive, but there remains the big challenge of doing the utmost before the deadline falls on registration. In many states, the opportunity to register conveniently in your home community or precinct comes this week or next.

Perhaps you have canvassed the situation in your community and know what the score is. If you haven't, get busy in these last few days to see that your friends, neighbors and employees are properly registered before the deadline.

* * *

MORE SENSITIVE INDEX: In last week's issue the editors announced a new index of steel prices which is infinitely more comprehensive and sensitive than anything that has been available heretofore. It is compiled by the Bureau of Labor Statistics of the U. S. Department of Labor. It is based upon the prices of 28 steel products and it takes into account not only the base prices but also pertinent extras. The index (p. 174), which had been issued monthly, now has been placed on a weekly basis, due in a large measure to the interest manifested by our editors on behalf of thousands of our readers.

It will be interesting to follow the changes in this index from week to week. It is so sensitive that a minor change in the price of one or more of the 28 components is reflected in the over-all index. This refined statistical service will be helpful to many buyers and sellers of steel.

* * *

REALISTIC TEAMWORK: A joint report of United States and Canadian government bureaus which are charged with the responsibility of planning for national defense reveals a really gratifying record of co-operative accomplishment. Without going into too much detail, we can say that the report (p. 64) concerns itself chiefly with the interchange of materials and services which the Dominion and the Republic are best equipped to provide.

Canada is producing some military items for us and we are providing some equipment for our northern neighbor. But the all-important thing is that Canada is the source of many important minerals which are vital to our economy. Further expansion of the present co-operation would be highly advantageous to both nations.

* * *

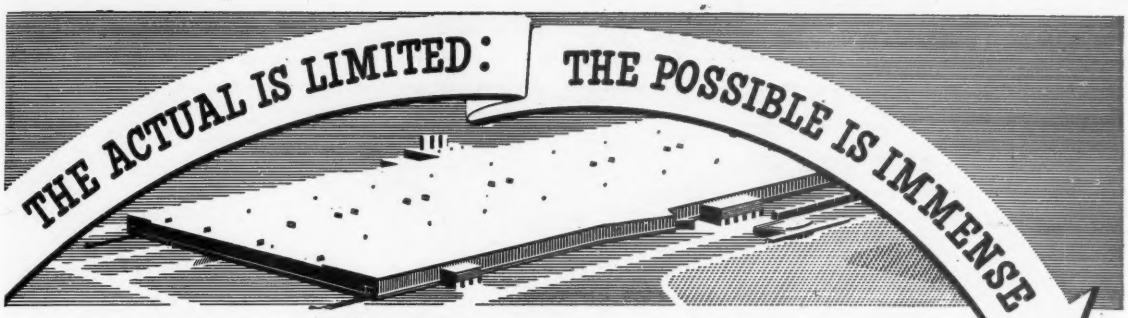
JOCKEYING FOR TRADE: A major result of the chaos caused by World War II was the destruction of normal trading in Europe and Asia. The defeated nations, Germany and Japan, face a difficult problem in restoring even a moderate portion of the trade they enjoyed prior to that war. Much of the business that once was theirs almost automatically now is shut off by the iron curtain or by other postwar political alignments.

These road blocks to normal foreign trade are creating interesting new economic relations. Strangely enough, West Germany is becoming an importer of rolled steel. And from whom does she import? She has been fairly successful (p. 73) in bidding against other potential importers, such as Sweden, Great Britain, Denmark and the United States, for plates from Japan. International jockeying for foreign trade advantage will be keen in the remainder of this decade.

* * *

UNDER THE SAME ROOF: Now that we have a number of metalworking establishments in which production of goods for military and civilian use is taking place simultaneously, the differences between the two can be studied more realistically. For instance, at the Willow Run plant of the Kaiser-Frazer Corp. one may observe in adjacent production lines the manner in which K-F automobiles, C-119 Fairchild cargo planes and C-123 Chase assault planes are built. Similarly at K-F's Jefferson Avenue plant in Detroit (p. 97) one can compare under one roof the techniques employed in the production of engines for K-F automobiles, North American T-28 advanced training planes and Sikorski H-10 helicopters.

Indicative of the marked difference between the problems of production for military aviation and civilian automobiles is the fact that engines for military aircraft cost more than 60 times more per pound of finished weight than engines for automobiles. Production of military and civilian goods in dual purpose shops may well lead to marked improvements in both lines of activity.



NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

© LE Co. 1952

BUILDS STRONGER MORE RIGID MACHINE BASE

...cuts weight 36%, lowers cost 45%

By **A. H. Hallenbeck**, Plant Manager
Gifford Wood Company, Hudson, New York

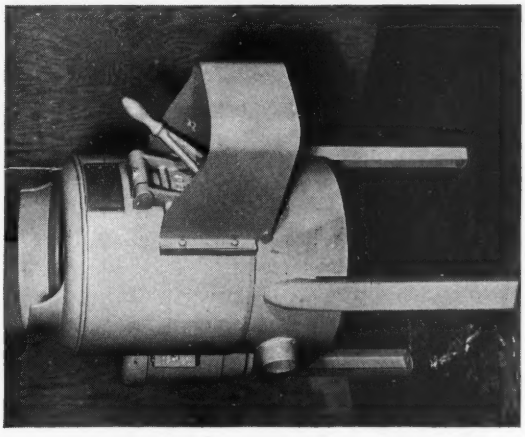


Fig. 3—Food processing machine *for the Gifford Wood Company, Hudson, New York. Streamlined appearance is simple to maintain, easy to clean.*

WELDED design has been adopted on many of our machine components because of lower cost and better quality production with steel. As shown in the welded base (fig. 2), lower weight with steel now saves on material cost as well as in transportation charges. Welded steel can be fabricated with simpler skills, helping to eliminate production bottlenecks in the shop. Components are pre-machined on light, fast machine tools prior to welding, saving time and cost of operating heavier shop equipment as was the case with cast construction.

Through welded steel, our shop now has better control of its work schedule. We are no longer dependent on outside sources for castings nor contend with storage and maintenance of pattern equipment.

Welded design makes it possible to meet price competition in our field that we were unable to do with the original cast designs. The product has a more modern appearance to improve selling appeal.

WELDED DESIGN ALWAYS SAVES STEEL AND LOWERS COST

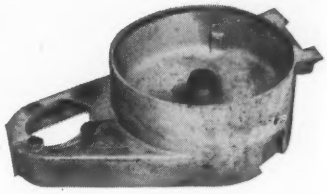


Fig. 1—Original Construction—*Base for processing machine. Weighed 67 pounds. Material Cost—$15.05; Machining Cost—$7.34. Total Cost $22.39.*

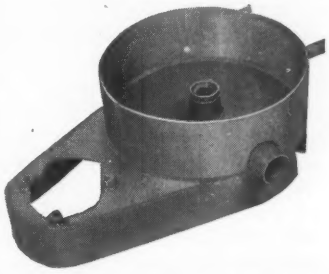


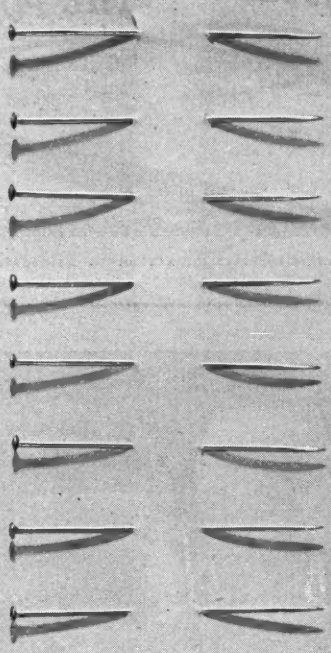
Fig. 2—Present Welded Steel Design—*Stronger, more rigid. Weighs only 43 pounds. Material Cost $2.50; Fabrication—$9.77. Total Cost—$12.27.*

HERE'S HOW

Machine Design Sheets available on request. Designers and Engineers write on your letterhead to Dept. 611,

THE LINCOLN ELECTRIC COMPANY
Cleveland 17, Ohio

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT



Fabricators looking for
shipment-to-shipment
STEEL UNIFORMITY
have found it at
Inland.
The reason:
Raw materials come
from the same sources
and finished products
are rolled on the
same mills
by the same men.

INLAND

INLAND STEEL COMPANY

38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Davenport • Detroit • Indianapolis
Kansas City • Milwaukee • New York • St. Louis • St. Paul

What's Wrong with This Picture? Nothing Until OPS Came Along with Its . . .

Jokers in Pass-Through Formula

By permitting metals increases but not labor cost rises in its new pass-through order on price ceilings, OPS penalizes industries that require a lot of manpower

"THIS ONE is going to be a real stinker."

So says a trade association executive. He echoes the near-unanimous sentiments of all industry men STEEL interviewed about the new pass-through pricing order — General Overriding Regulation 35 — which permits all manufacturers to pass through cost increases for steel, pig iron, copper and aluminum.

What It Is—GOR 35 authorizes users to add 100 per cent of their increased materials costs to the ceilings of the goods they sell, effective Sept. 10. It establishes two alternative methods which you may use in computing new ceilings. One method permits adjustments on the basis of individual items. It's a simple dollars-and-cents addition of the extra cost of the metal to the old ceilings. The second method is for large manufacturers who make many products. They can determine a "group factor" or percentage which they may apply against the old ceiling prices of individual items in figuring new ceilings.

The order doesn't deal with higher freight rate costs. How those may be added will be spelled out in another order now being prepared.

The Catch—Nor does GOR 35 deal with higher wage costs. No order on that matter is planned, and the only recourse you have is to absorb those costs or try to get help through the earnings standard whereby OPS theoretically allows adjustments if earnings drop below 85 per cent of base years. "But, actually," one foundryman points out, "you get nowhere with OPS unless operations are actually in the red." Nobody whom STEEL interviewed around the country had much hope of any relief through the earnings standard.

Yet wage increases are coming right and left. The "tandem" order of WSB relating to companies that historically parallel the steel industry's wage rate makes virtually automatic increases in those cases. And WSB is lenient in granting all other hikes if they follow the steel pattern. Under the new order precision manufacturers and other producers with high labor costs are penalized more than companies that can get by with more automaticity.

Retroactive? — Another disap-

pointment about GOR 35 is the fact that it's effective Sept. 10, not retroactive to the steel strike settlement date as many manufacturers hoped. "Steel companies got their price increases made retroactive," a screw machine products maker points out. "Why can't we?"

Still another objection is the requirement that companies using both mill and warehouse as supply sources use a weighted average in determining the cost increase. That's a nuisance for small consumers using both sources. (For other reactions, see p. 185).

The Long Look—The stringency of GOR 35 strengthens a suspicion many business men have: That controls for industry will be kept quite severe until the November election and then allowed to expire slowly until the official death day, next Apr. 30.

Mobilization Partners: Canada—U.S.

When military equipment, like aircraft, is used by both, it means efficiency—and also worry by Canadians on such matters as the American debate over the defense stretchout

PARTNERSHIP BETWEEN the United States and Canada in the greater production of military goods, expansion of reciprocal procurement and increased production of scarce raw materials—that's the goal of the Joint Industrial Mobilization Committee, and it's well along the way to being achieved.

Composed of top mobilization officials in both countries, the committee was reconstituted in July, 1951, after a successful stint in World War II. Because of the preponderant economic strength of the U. S., Canada is often obliged to follow its neighbor's lead on defense matters, and so the dominion members of the committee are now following with especial interest the Washington debate on whether the stretchout should be stretched out still more (see the story on p. 65). The matter is vital because the committee's work in dovetailing the defense efforts of the North American partners lies in the fields of materials, procurement and production.

Materials—Under joint planning, the U. S. expects to receive increasing supplies of nickel, copper, zinc, lead, titanium-dioxide, selenium, cobalt, iron ore and other important materials from Canada. Canada anticipates larger imports of steel, sulphur, molybdenum and special forms of other metals as well as minor quantities of other materials.

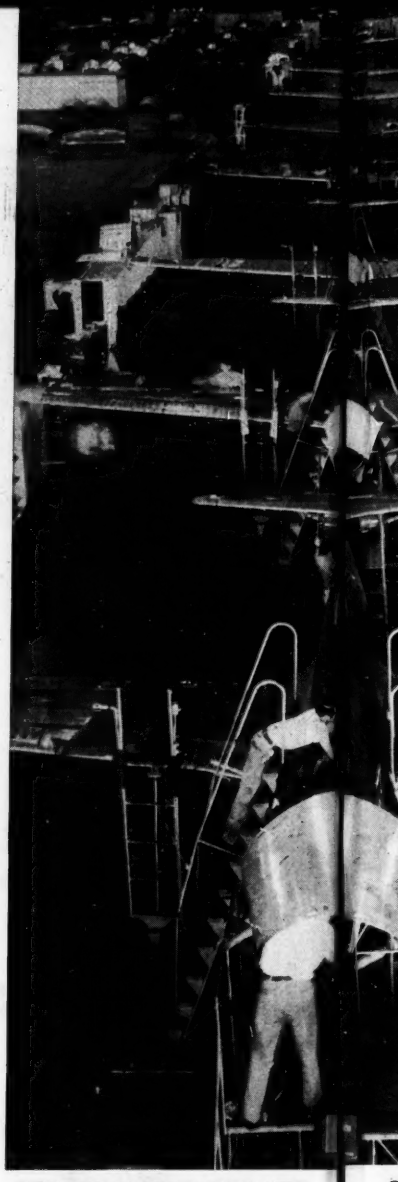
Expansion of production and procurement in Canada is encouragend by the U. S. government through accelerated amortization to U. S. firms expanding in Canada; through long-term contracts with Canadian firms under which the production of nickel, and, to a lesser extent, copper and cobalt will be expanded; and through several long-term procurement contracts with Canadian firms for scarce materials.

Canadian policy has been one of encouragement and stimulation through limited direct financial assistance and tax allowances in special cases. Mining activities are further encouraged by a liberal depletion allowance and exemption from corporation profits taxes for three years for base metal mining operations.

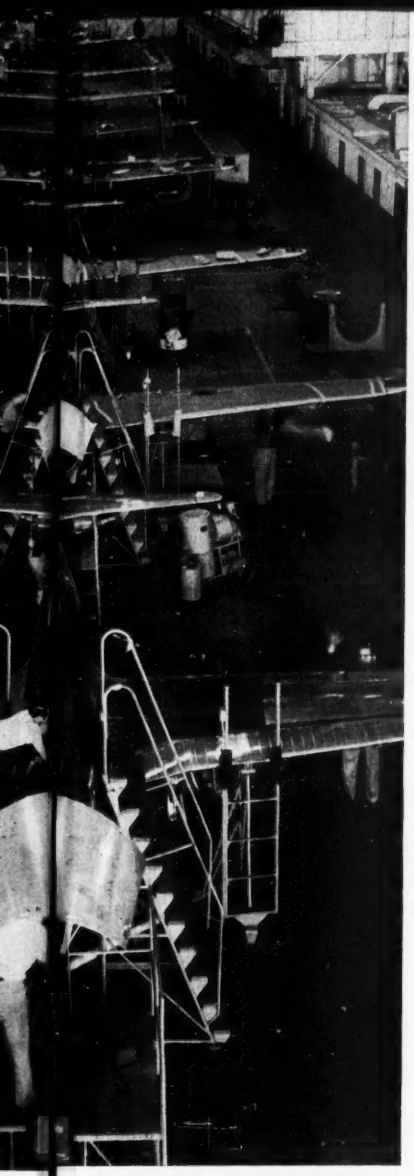
Procurement — Under an agreement reached early this year, auditing and inspection services of each country are available to the other; each country agrees that it will not charge the other for the use of government-furnished facilities nor for procurement administrative cost charges. Further, the U. S. Air Force has made arrangements to take title to materials, equipment and components produced by Canadian companies, thus permitting their duty-free entry into the United States. Similar arrangements are under way for the other services.

There are striking examples in the procurement field of Canadian plants producing defense supplies for the United States. Gun lathes are being produced in Canadian plants for U. S. arsenals; a Canadian gun plant is building U. S.-type naval guns for both navies. The T-33 trainer and F-86 E jet fighter are rolling off Canadian assembly lines as well as electronics equipment, hexacholoethane and gunpowder.

Canadian military procurement in the United States has been relatively heavy, through a procedure established with the Mutual Security Agency. Sixteen of the transactions involve amounts of over $3 million each, 26 amounts of over $1 million each. One of the main reasons for the heavy



STRETCHOUT DEBATE
Canada Has A Stake, Too



STRETCHOUT DEBATE
Politics Influences in U. S.

Canadian procurement in the United States was the policy decision of the Canadian Government to adopt U. S.-type equipment.

Production — Essentially the guidance of production will be accomplished through liaison between the defense departments of the two countries. A branch office of the National Production Authority's Canadian Division has been established in Ottawa while a Washington Office of the Canadian Department of Defense Production has also been established.

Stretch Out the Stretchout?

Schism among top government officials over a slow-down or a speed-up of the defense mobilization program is out in the open, and a change may be coming

THE LATEST Washington debate is whether the military stretchout ought to be further stretched out, or whether it ought to be reversed.

That argument has been going on behind closed doors for several weeks. Defense Mobilization Director Henry H. Fowler has made it clear that in his opinion materials are now available in sufficient quantity to justify raising the sights on the military programs. However, other top mobilization officials believe a stretchout of the stretchout is inevitable.

Failing Funds—One factor behind this belief is the apparent reduction in obligational authority to the military services which resulted from the increases in the price of many metals resulting from the summer's strikes. Officials say schedules for production of almost everything except aircraft and guided missiles have been cut back because of "lack of funds."

In the case of aircraft, engineering and production problems are a major factor. Air Force Secretary Finletter said last week that production of the F-86 "Thunderjet" was being delayed for a new gadget which would improve the tactical superiority of the plane. The F-100, a new plane is not yet ready for any kind of quantity production with engineering bugs still to be worked out. Nor have Air Force troubles with the Sapphire engine (J-65) been solved.

Metallic Indigestion — All this means, of course, that materials are not being chewed up as fast as was anticipated. The first returns of fourth quarter tickets on aluminum have been made by the Air Force and the Munitions Board is checking the status of steel orders for October delivery under the set-aside.

Also on the side of the stretchout of the stretchout came the statement by Defense Secretary Lovett that the Defense Department budget request would be somewhat lower than for this fiscal year. Informed officials indicate the figure might be as much as $10-$15 billion less than the figures authorized by Congress. The idea seems to be that the Defense Department can't obligate more than about $4.7 billion a month with any degree of care or complete the stacks of paperwork required before contracts are formally negotiated.

Lid Comes Off—The whole argument came out in the open last week when Roy C. Turner was sworn in as a member of the Council of Economic Advisors. Mr. Turner has been working closely with John R. Steelman, who was, until last Monday, acting director of the Office of Defense Mobilization. Mr. Turner said, at the swearing-in ceremony, that new government studies show defense spending and production have virtually reached their peak and would be levelling out somewhere around $4 billion a month. He pictures "a difficult and delicate job to maintain our present prosperity."

Repercussions were so great that by weekend the Council of Economic Advisors had ordered a special study rushed to determine whether military targets could be boosted. Henry H. Fowler, after a conference with Senator Burnet R. Maybank, (D.,S.C.), chairman of the Joint Committee on Defense Production, in Greenville, S. C., told newsmen "in reviewing the program to date and the progress that must be made in the period ahead, we are in agreement that two simple facts emerge above all others: First, there is still a long way to go in achieving the goals of preparedness which the nation has set for itself; second, that the momentum of the nation's effort to reach these goals must be maintained and wherever possible increased." Mr. Fowler has long advocated a step up in the military program.

Who the ultimate winners will be in the brawl remains to be seen.

85-Day Coal Supply

(As of Aug. 1, 1952)

MAJOR COAL USERS	STOCKS (NET TONS)	DAY'S SUPPLY
Electric power utilities	35,895,000	146
Coke Ovens	16,091,000	64
Steel and rolling mills	1,195,000	66
Cement Mills	1,456,000	75
Railroads (Class I)	3,560,000	47
Other industrials	19,456,000	99
TOTAL INDUSTRIALS	77,653,000	94
Retail dealer stocks	1,661,000	16
GRAND TOTAL	79,314,000	85

Coal Stocks: Strike Insurance To Burn

It's no secret that industrial coal users have been laying up abnormally large reserves and all but those with limited storage facilities feel they have "ample" stocks

INDUSTRIAL coal users have about 90 days' term insurance in case of a bituminous coal strike Sept. 22.

The accompanying table shows average total coal stocks at 85 days, as of Aug. 1, the latest date for which official figures are available. The memorial close-down of the mines in late August and wild-cat walkouts since then have whittled that figure but it's still close to 80 days' average.

Vulnerable—As the table shows, the railroads among the industrial groups are in the most vulnerable position. Even that's not serious and extensive dieselization on the Class I lines is an assurance that a complete rail tieup resulting from a coal strike is remote.

Though varying with local conditions, steel mills have from two to two-and-a-half months' stocks above ground and are taking all they can get as added insurance. Youngstown mills estimate they have a month's supply on hand. But, they add, they would have to curtail operations in two to three weeks after a strike began to conserve coal supplies and protect coke ovens and other vital operations.

Most mills in Cleveland reportedly have two months' stocks and regard this as comfortable. Stocks at the mills in Chicago are at near-record levels though it's recognized that foundry and steam-generating facilities would feel a coal strike first and could be hurt by a prolonged strike.

Different Story—What the table doesn't show is the position of the small coal consumer—small industrial users and householders. Limited storage space prevents building big reserve stocks and those users would be in trouble in a matter of a couple weeks.

United Mine Workers' John L. Lewis hasn't proclaimed his contract demands as yet. They will certainly include a wage settlement roughly equal to that made with the steelworkers, though. More important will be difficulties over the operators' royalty contributions to the miners' welfare fund, currently 30 cents a ton.

Picking the Captives—Tendency so far in the ostensibly local strikes has been to tie up captive mines of steel companies. These include the Robena mine of U. S. Steel, three mines of Jones & Laughlin Steel Corp., the Mathies mine of Mathies Coal Co., which is owned jointly by Pittsburgh Consolidation Coal Co., National Steel Corp., Youngstown Sheet & Tube Co. and Steel Co. of Canada. UMW strategy for this year's contract negotiations may be to pressure the commercial coal operators by lining up the captive operators first.

Whatever the approach, the UMW will find that industry is carrying a lot of strike insurance this year—80 million tons worth.

Hudson To Reopen at Newcastle

Hudson Motor Car Co. will reopen its Valley Mfg. Co. plant at Newcastle, Pa., as a steel stamping plant. Presses are being shipped in from Detroit, several hundred workmen are being employed and its plant will be reopened as soon as the supply of sheets and strip are obtained.

It is understood Hudson has made a contract with Jones & Laughlin Steel Corp. for steel supplies. Valley Mfg. was organized by Hudson as a subsidiary company during the postwar steel shortage and it was opened as a hand sheet mill. However, when the steel shortage eased in 1949 the plant was closed and the sheet mill equipment was sold. The plant is located in the old tin plate mill of U. S. Steel Co.

Alcoa To Install New Mill

Aluminum Co. of America will install a new rolling mill for tapered aircraft skin sheets at its Davenport, Iowa, plant.

Under contract to the Air Force, the 144-inch, 4-high reversing mill will turn out skin plates up to 10 feet wide and more than 33 feet, 10 inches long. Present limits are slightly more than 5½ feet and 25

feet, respectively. The mill, capable of a maximum delivery speed of 120 feet per minute, will be driven by a General Electric 3000 hp, dc motor.

DPA Grants 80 New Certificates

General Electric Co., Rome, Ga., power and distribution transformers, received the largest of 80 certificates of necessity for accelerated tax amortization granted by the Defense Production Administration.

The certificates, amounting to $62,727,402, were issued from Aug. 28 through Sept. 3. Thirty-seven of the certificates were granted for facilities involving less than $100,000.

Accelerated tax amortization amounting to $22,127,662,552 has now been granted for 13,611 new or expanded facilities.

Carriers Set Cargo Records

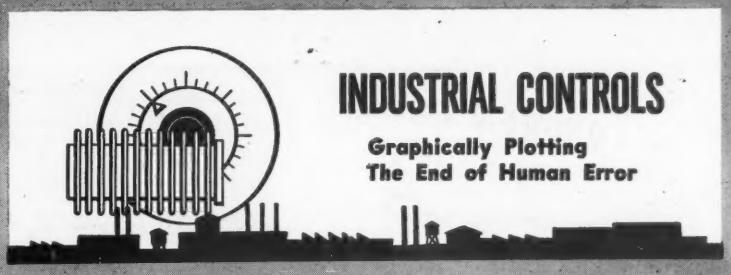
The Great Lakes iron ore fleet rolled up its sleeves in August, and with the help of seven new freighters, set two new cargo records.

Carrier cargoes in August hauled 14.3 million gross tons, says the Lake Carriers' Association in its monthly tonnage report. This compares with 13.2 million tons carried in August, 1951. In the week ended Sept. 1, the fleet hauled 3.3 million gross tons, a new record for a seven-day period.

Total shipments of ore, coal and grain was 22.4 million net tons, highest for the month since 1948. Iron ore moved in August was 16 million net tons, compared with 14.8 million net tons for August last year. Coal shipments amounted to 5.3 million tons for August, 1952, as compared with 5.7 million net tons for the month last year.

Cliffs Hunts Canadian Ore

Cleveland-Cliffs Iron Co. is looking for iron ore deposits in northern Canada. The company is exploring and examining ore prospects in both public and crown lands in New Brunswick, Quebec and northwestern Ontario. Prospecting is being carried out by the company's wholly-owned subsidiary, Canadian-Cliffs Ltd.



INDUSTRIAL CONTROLS

Graphically Plotting The End of Human Error

DON'T LET George do it, let instruments do it. That's the feeling the bright-eyed young engineers conveyed to visitors at the Seventh National Instrument Conference in Cleveland last week. There are instruments to do everything from controlling viscosity to operating entire assembly lines; including instruments to watch instruments watching instruments while machines run machines to make machines.

For while the sociologists hurriedly catch up on their science fiction, instrument designers are hard at work taking the human error out of production . . . and that's John Doe.

Circa Buck Rogers — Process measuring and controlling instruments were being used by an estimated 14,000 manufacturers in 1930. Today close to 40,000 use more than 8000 different automatic devices and surveys indicate that at least 200,000 of the 250,000 manufacturers in the United States are potential users of industrial instruments. Heavy demand is coming from industrial users seldom considered before World War II, including atomic energy research, jet propulsion and guided missiles.

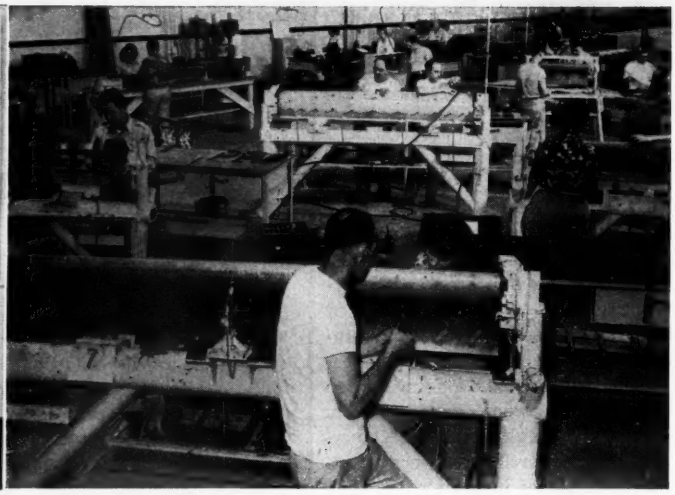
Automatic temperature control equipment is a good example of the growth because it was the earliest industrial instrumentation. That branch still accounts for about 55 per cent of all industrial instrument sales. About 20 manufacturers do 90 per cent of the temperature controller volume and they report sales up 5 to 10 per cent this year. If the present trend continues, 1953 will be an even bigger year.

Hair Splitters—Key to the increased use of their products is research and modification to increase utility. They don't merely split hairs—they ask just how industry would like them split. Rapid temperature changes covering only a single second can now be stretched over an entire chart. The much modified thermometer-type controllers are still used for temperatures up to 1200 degrees F, but the pyrometer was developed to handle temperatures up to 3600 degrees F.

A good example is in the making of low carbon steels in open hearth furnaces at near 3000 degrees F. The temperature is only about 50 degrees below the disintegrating point of the furnace roof, necessitating accurate temperature control for maximum furnace life. Normal measuring instruments would melt on contact with the metal or the furnace roof, but development of the radiation pyrometer, a controller with photocells, makes possible measurement of roof temperatures within five degrees.

Broad Application—Leading industries utilizing temperature controls and other industrial instruments include: Chemical, steel and metallurgical, petroleum, paper, ceramic, textile, food, power and transportation. That means the capacities of industrial instrument makers are being taxed to meet demands for defense producers as laboratory and research requirements mount. Electronically operated controllers are undergoing a rapid evolution while the earlier pneumatic and electrically operated devices continue to undergo development.

Producers report substantial backlogs, varying with the type of unit, due primarily to limited facilities and the frequent need for tailor-made installations. Shortages of nickel, chrome-stainless and other requisite metals have not been severe though some substitution has been made. The heavy demand is a tribute to the progress in industrial instrumentation.



Hitting the Stretch, But Not at the Race Track

The race track board above is part of the industrial relations program at Longren Aircraft Co., Torrance, Calif. The white horse represents the job estimate, and the black horse stands for actual production. If the black horse wins, employees get a bonus. Longren owns facilities for fabrication and assembly of sheet metal parts for aircraft, right. In 1934, the company produced first stretch-formed full monocoque aircraft fuselage

Unified Procurement May Aid Defense Contractors

YOU MAY find less confusion and red-tape in obtaining contracts for military orders as the Armed Forces merge their procurement and supply systems.

Benefits should result from a single centralized group of buying policies to replace the voluminous rules of the individual military services. A single supply catalog for the entire military establishment will supplant the 15 separate catalogs—some of which contain dozens of volumes—now in use.

Renegotiation—Fewer renegotiations of contracts may occur under a centralized purchasing system. Procurement officials will have more extensive information on which to base their purchasing at the time of renegotiation, claims the Defense Department.

Other expected benefits: Faster preparation of contracts, more definite contracts, simplified and standardized contract forms and accounting procedures, and wider advertising of proposed contracts.

Funds Banned—First steps in the unification program resulted from Congressional criticism. After hearings on military procurement by the Hebert, Bonner and Johnson subcommittees, a rider was tacked on to the military appropriations bill for fiscal 1953. The rider banned obligation of military funds after Sept. 8, unless they are in accordance with regulations issued by the defense secretary.

Defense Secretary Robert Lovett has just issued a directive containing the ground rules for procurement, production, warehousing and distribution of military goods. The directive also includes policies for cataloging and standardizing items needed by the services. Those unification objectives will be enforced by other regulations to come, says Mr. Lovett.

As a final goal, the defense secretary says he hopes to bring all military purchases under a single body of regulations.

SELECTED DEFENSE CONTRACTS IN EXCESS OF $100,000

PRODUCT	CONTRACTOR
Shells, 155 mm	W. Pullman Works, International Harvester Co., Chicago
Conversion Kits for Mortars	Bell Machine Co., Oshkosh, Wis.
Machine Guns, 50 cal.	Colt's Mfg. Co., Hartford, Conn.
Cartridge Cups	Olin Industries Inc., E. Alton, Ill.
Cartridge Storage Cases	Peoria Consolidated Manufacturers Inc., Peoria, Ill.
Primers, Percussion	National Sewing Machine Co., Belvidere, Ill.
Hulls for Tanks, M47	Continental Foundry & Machine Co., E. Chicago, Ill.
Parts for Gun Mounts	Vickers Inc., Detroit
	Arma Corp., Brooklyn, N. Y.
	Sperry Corp., New York
Trucks & Trailers	Reo Motors Inc., Lansing, Mich.
Parts for Switchboards	I-T-E Circuit Breaker Co., Philadelphia
Transformers	I-T-E Circuit Breaker Co., Philadelphia
Electron Tubes (2 Contracts)	Raytheon Mfg. Co., Waltham, Mass.
Spectrum Analyzers	Hazeltine Electric Corp., Little Neck, L. I., N. Y.

Navy Seeks Conservation Ways

Scrutinizing everything, from jet engines to bug bombs, Navy technicians are looking for new methods to conserve scarce and critical materials.

The Office of Naval Material which has directed the conservation program since January, 1952, says that although the main purpose of the program is to find American substitutes for materials which are scarce or must be imported, significant dollar savings have also resulted.

In an investigation with the Navy Bureau of Aeronautics, such items as screws, safety belt hardware and para-raft slide fasteners have been studied and replaced. From the standpoint of critical materials, it reported that the J-48 jet engine is one of the most economical manufactured in the use of columbium, cobalt, tantalum and tungsten.

Through redesigned fabricated buildings, 3,360 tons of steel and 1.6 million tons of zinc were saved in the first quarter this year.

CHECKLIST ON CONTROLS

Materials Orders

NICKEL—Amendment of Sept. 3, 1952, of Schedule 1 of NPA Order M-80 permits electroplaters to use nickel in a "strike" of up to an average thickness of .00005 inch for a protective coating under electro-deposited chromium. It was effective Sept. 3.

ALLOY SCRAP—Amendment 1 of NPA Order M-20, issued and effective Sept. 4, 1952, permits NPA to allocate and direct the use of alloy scrap.

CONSTRUCTION MACHINERY — Amendment of NPA Order M-43, issued and effective Sept. 4, 1952, provides for self-authorization for repair and replacement parts or components by construction machinery manufacturers and owners. It regroups List A of the order into two parts, the materials affected by this amendment being placed in Part II.

CONVERSION STEEL—Direction 5 to NPA Order M-46 and Direction 5 to NPA Order M-46A permit gas and petroleum operators in the U. S., Canada and foreign countries to acquire 500 tons of finished carbon conversion steel for use in approved construction projects without an allotment. The directions also provided that finished carbon steel in the form and shape of oil country tubular goods will continue to be obtained by allotment only. Order M-46 applies to U. S. and Canadian operators, and Order M-46A applies to foreign operators. The directions were issued and effective Sept. 5, 1952.

SECONDARY, IMPORTED STEEL—Amendment of Sept. 8, 1952, of Direction 3 to NPA Order M-6A removes secondary and imported steel products, together with carbon steel, hot and cold-rolled sheet and strip, from the temporary warehouse "freeze" imposed by Direction 3 to NPA Order M-6A. It was effective Sept. 8.

TIN CANS—Direction 4 to NPA Order M-25 was revoked Sept. 9, 1952, effective Oct. 15, 1952. Issued in the wake of the steel stoppage, Direction 4 suspended certain can material specifications and directed can manufacturers to give preference to orders for packing perishable goods.

TIN CANS—Direction 5 to NPA Order M-25 issued Sept. 9 and effective Oct. 15, 1952, permits tin can manufacturers to make unrestricted use of cans or parts of cans made from emergency purchases of tin plate between June 30, 1952, and Sept. 30, 1952.

Controlled Materials Plan

STEEL—Amendment 6 of CMP Regula- 1, issued and effective Sept. 9, 1952, states that producers who were eligible to apply the suffix B-5 to authorized controlled material orders of steel bearing the quarterly identification 2Q52 or 3Q52 placed on or before May 1, 1952, but who did not use the suffix, now may convert outstanding orders prior to shipment of the steel by adding the B-5 suffix.

Price Regulations

PIG IRON—Supplemental Regulation 116 of the General Ceiling Price Regulation permits price increases of $2.50 a ton for pig iron containing a maximum of 4.99 per cent silicon and $3.00 a ton for pig iron containing a minimum of 5 per cent and a maximum of 17 per cent silicon. Producers may apply the ceiling price increases to all deliveries made on and after July 26, 1952. It was issued and effective Sept. 4, 1952.

DEFENSE CONTRACTORS—Amend- 1 of Revision 1 of General Overriding Regulation 2 suspends until Oct. 15, 1952, Section 31 of GOR 2. This section required certain defense contractors and subcontractors who make commodities to be delivered to defense agencies, and persons performing services on such commodities, to state their ceiling prices in the offer or bid and in the contract or subcontract if the commodities or services were not exempted from price control. Amendment was issued and effective Sept. 2, 1952.

SALES F. O. B.—Amendment 2 of Revision 1 of General Overriding Regulation 2 provides that prospective sellers to the government, its agents and suppliers may determine their ceiling prices f.o.b. any destination within a zone by adding to f.o.b. factory (or other shipping point) ceiling prices the average freight from the shipping point into the zone at the lowest available common carrier rates. Similar provisions are contained for determining ceiling prices f.o.b. any destination within a zone on the basis of previously established "delivered" or "f.o.b. destination" ceiling prices. Amendment was issued Sept. 2, 1952, effective Sept. 5.

BRASS, COPPER — Office of Price Stabilization announced on Sept. 5, 1952, that producers of brass mill and copper wire mill products will not be required to recalculate ceiling price adjustments covering cost of foreign copper before Dec. 1, 1952. In Amendment 1 to CPR 68 and Amendment 1 to CPR 110, OPS contemplated that a recalculation would be necessary on Sept. 15, but now finds it to be unnecessary.

PASS THROUGH—General Overriding Regulation 35, issued and effective Sept. 10, 1952, permits manufacturers to adjust ceiling prices in order to "pass through" increases in costs resulting from steel price increases. For further details see p. 63.

TIN—Amendment 14 of CPR 31, issued and effective Sept. 11, 1952, sets the ceiling price for resellers of tin, f.o.b. New York, at $1.215 a pound.

Blast Furnace Output Sags

Blast furnace production dropped in July to the lowest level in many months. Output in that strike-ridden month was 1,002,512 net tons, the American Iron & Steel Institute reports. In the preceding month, also strike-afflicted, production was 1,068,281 tons.

The July rate of operations was 16.1 per cent of capacity. The month's output consisted of 995,- 975 tons of pig iron and 6537 tons of ferromanganese and spiegel.

Blast furnace production through the first seven months of 1952 totaled 30,911,554 net tons, compared with 41,194,037 tons in the corresponding period of last year.

Steel Production: Making Up for Lost Time

REBOUND of the steel industry from the mid-summer strike sent production of ingots and steel for castings in August to the highest monthly level since March.

August output was 8,499,000 net tons, the American Iron & Steel Institute reports. This was at a rate of 92.4 per cent of capacity. In August, 1951, production totaled 8,739,095 tons for ingots, castings.

In the first eight months of 1952, production was 55,158,705 net tons, a drop of nearly 14.6 million tons from the corresponding 1951 period.

Loss of steel production from April to August because of steel strikes was approximately 18 million tons.

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (Net tons)	No. of weeks in mos.
1952	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity		
January	8,103,123	100.7	407,298	89.3	625,696	89.7	9,136,117	99.3	2,062,329	4.43
February	7,703,066	102.4	382,712	89.8	571,432	87.6	8,657,210	100.7	2,091,114	4.14
March	8,401,140	104.4	378,861	83.1	624,190	89.5	9,404,191	102.2	2,122,842	4.43
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,821,318	89.0	27,197,518	100.7	2,092,117	13.00
April	7,101,199	91.1	323,006	73.2	566,937	83.9	7,991,142	89.7	1,862,737	4.29
May	7,291,865	90.6	318,642	69.9	594,089	85.2	8,204,596	89.2	1,852,053	4.43
June	1,446,927	18.6	22,862	5.2	169,702	25.1	1,639,491	18.4	382,166	4.29
2nd Qtr.	15,839,991	67.0	664,510	49.6	1,330,728	65.0	17,835,229	66.0	1,370,886	13.01
1st 6 Mos.	40,047,320	84.8	1,833,381	68.5	3,152,046	77.0	45,032,747	83.4	1,731,363	26.01
July	1,347,587	16.8	2,000	0.4	277,371	39.8	1,626,958	17.7	368,090	4.42
†August	7,604,000	94.5	309,000	67.8	586,000	84.0	8,499,000	92.4	1,919,000	4.43

Note—The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings; total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,- 780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons. The percentages of capacity operated in 1951 are calculated on weekly capacities of 1,746,337 net tons open-hearth, 107,806 net tons bessemer, 144,891 net tons electric ingots and steel for castings, total 1,999,034 net tons; based on annual capacities as of Jan. 1, 1951, as follows: Open-hearth 91,054,020 net tons, bessemer 5,621,000 net tons, electric 7,554,630 net tons; total 104,229,650 net tons.

† Preliminary figures, subject to revision.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

Army Ordnance is hard at work smoothing its weapons performance and procurement. The result is changes in specs and methods largely unheralded

WITH A MINIMUM of publicity the Army Ordnance Corps improves many weapons, develops new ones, finds substitutes for critical materials in various applications, writes much more rigid specifications to insure better weapons performance on the battlefield and, with the assistance of carefully selected contractors, is evolving vastly more efficient production techniques than those of World War II.

Illustrating this continual progress, here is a grist of news items

picked up by STEEL last week in a visit at Ordnance headquarters in the Pentagon:

New Methods—Following several months' experiments with the lost wax and shell molding processes, the Watervliet Arsenal is turning out some noteworthy castings. Using these methods, parts formerly forged now are being cast successfully, some with sections as thin as 3/32-inch and all requiring minimum machining.

Repercussions in production processes at gun contractors' plants may be expected from a decision by Ferrous Metallurgical Laboratories, Watertown Arsenal, that all steel going into gun tubes in future must be tempered martensite. (Some of the sections are 5 and 6 inches thick!)

New Materials—The Ordnance Corps is making a start on rotating bands made of iron powder for several special shells where the number of rounds called for in normal service is not very great. Further development is necessary since the iron powder bands abrade gun liners excessively as compared with the conventional gilding metal bands.

Liners of all 90 and 120-millimeter tank guns now are being chromium-plated to slow down the rate of erosion and thus maintain muzzle velocity and accuracy life over a longer period. But some Army experts contend it is questionable whether plating helps substantially toward this objective. Hence a proposal to apply chromium plating to all other Army artillery is controversial.

New Contracts — The heavy foundry industry has been requested to submit recommendations by Sept. 15 for ways and means of expanding capacity for producing 1500-pound and heavier steel armor castings for tank hulls and turrets. The proposed increase is in addition to an extensive program which Army Ordnance already has under way for establishment of heavy armor casting capacity at several foundries. In general, it is expected the additional capacity can be attained by expanding existing plants rather than erecting new ones. No problems are foreseen at this time in the production of lighter steel armor castings.

Middle-Age Spread? . . .

Further decentralization of operations, embodying the establishment of small district offices within each region, is required to enable the Small Defense Plants Administration to render effective assistance to small business.

That's the recommendation of the staff of the Mansfield subcommittee, House Small Business Committee, following recent field hearings. Immediate goal is to get more defense contracts and subcontracts into the hands of small firms.

Retirement: Not All Roses . . .

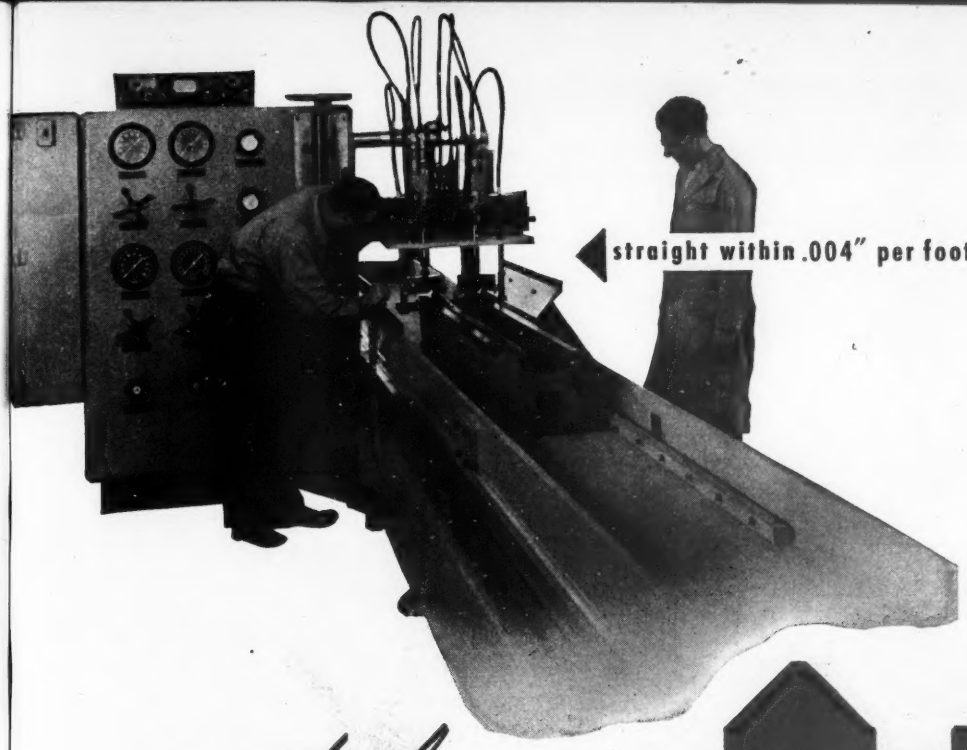
Retirement is frequently as disillusioning as a honeymoon. The long-awaited release from the time clock leaves many older employees feeling like fish out of water instead of fishermen. What to do with time and energy after retirement—probably at about 65—was one of the questions discussed at the annual meeting of the Gerontological Society in Washington.

Recognizing that retirement merely opens the door to pleasure fulfillment but does not assure it,

many firms now prepare their men for retirement well ahead of time—usually at ages 58 to 60. When the time for retirement comes, they're equipped with a program of new, fully-rewarding interests.

'Know How': Lesson One . . .

Revival of the former practice of assigning young procurement officers to steel machine tool and other supplier companies is under consideration by the Department of Defense. The officers would spend time in the various departments of a company filling an essential role in defense industry. By thus getting a grounding as to what makes a defense industry tick, the officers later would be better informed in handling their procurement duties.



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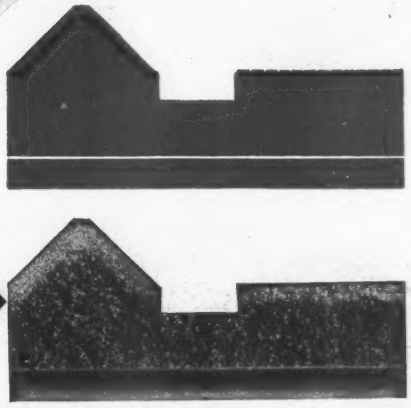
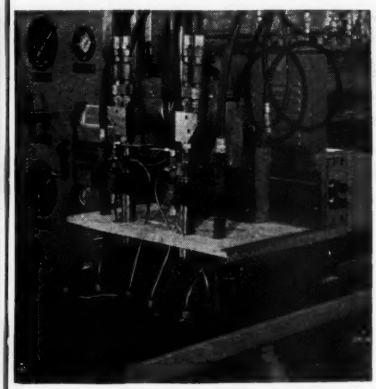


lathe bedways flame hardened to Shore 70-75



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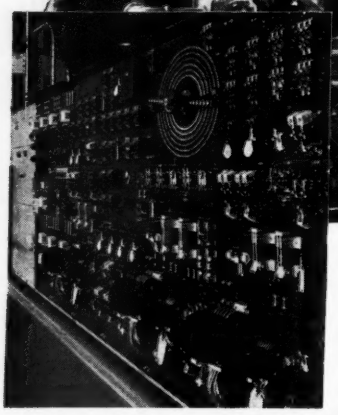

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Puerto Rico's Growing Industry

The Porto Rico Iron Works shop at Ponce, Puerto Rico, is a modern machine shop that turns out a variety of metalworking products and equipment for the island's growing industries as well as sugar industries of Dominican Republic and the South American nations. The firm is one of the largest on the island

Steel Flow: To, Not From, Germany

By looking for steel to buy and easing the way for imports, the Germans implement their desire to export less semifinished steel and feed more into finished products

WEST GERMANY hasn't any real interest in exporting steel right now. In fact, Germany is more and more becoming an importer of steel, particularly rolled steel.

The German government is granting liberal foreign-exchange allocations for iron and steel imports, almost $10 million worth in second quarter, 1952. Recent lifting of import duties on iron and steel under the Schuman Plan will strengthen Germany's role as an importer.

Control Is Out—Another indication that Germany has no desire to enter competitively the semifinished steel export market is the decontrol of German iron and steel prices effective Aug. 1. Although it's hoped that prices will eventually stabilize below the old ceiling prices, the immediate reaction was a mild rise. Prices changed as shown in the table.

German Steel Prices Rise

Deutsch Marks per Metric Ton

	Old Price		New Price
Steel Bars	390.50		404.50
Structurals	378.95		392.95
Concrete Bars	390.50		431.50
Girders	375.90		389.90
Heavy Plates	400.10	Thomas Proc.	470.10
		Open-Hearth	495.10
Medium Plates	434.90	TH	504.90
		OH	529.90
Strip Steel	437.90	TH	473.90
		OH	481.90
Wire Rods	399.55	TH	434.75
		OH	449.75

Good Shopping—Steel bars rose only by 3 to 4 per cent and only rolling mill products like heavy or medium plates increased as much as 16 to 17 per cent.

Germany is one of the countries presently shopping around for heavy plates along with Sweden, Great Britain, Denmark and the U. S. They've done well, too. The contract for 35,000 tons of ship plates from Japan, the only country in a position to export plates, is not the first one to be placed. Several months ago, the German firm, Mannesmann, bought about 11,000 tons of ship plates from Japan which have already arrived in Germany. That first deal was based on a price of $136 per ton, f.o.b. the Japanese port. Another sale by Yavata Iron & Steel Co. to Deutsche Werft Hamburg for 8000 tons was based on $135 per ton. The latest deal for plates, some of which are substandard, by a Dusseldorf jobbing firm, Schliecker, is for an average price of $119 per ton, f.o.b. the Japanese port.

Germany's neighbors are also shipping more steel into the country, mainly into the south and southwest sections. Experts estimate that Belgium alone is shipping between 30,000 to 40,000 tons of rolling mill products into Germany a month.

Only pig iron is being exported from the Fatherland and most of that goes to Belgium.

Belgian Steel Exports Firm

The combination of higher U.S. steel prices and the prospects of a long wait for some U. S. products have had a favorable effect on the Belgian export market. Base price for merchant steel for the dollar market firmed back up to $110 to $112 per metric ton and a general rise of about $5 on all steel products resulted.

Ordering this year still lags behind last year's levels: Belgian steel exports in May, 1952, were about 11 per cent below those of December, 1951. Orders booked in May represent only 55 per cent of the orders booked in December, 1951, and 70 per cent of the monthly average booked in 1951.

Low Blast Furnace for Mexico

Four Mexican technicians and shipments of Mexican iron ore and coal have arrived in Germany to find out whether the "low blast furnace" process developed in Germany (STEEL, Aug. 4, p. 71) will yield satisfactory results for Mexico. That country imported about 1.2 million tons of pig iron in 1951, all of it from the U. S., and the Mexican government is greatly interested in becoming self-sufficient for the product.

A corporation financed by Mexican and German interests is reportedly being organized to operate the blast furnaces with German interests subscribing more than a third of the capital, says the *Foreign Commerce Weekly*.

What C

INDUSTRY E

WHAT CAN industry expect from Eisenhower or Stevenson? A partial answer is this: A better deal from either than from Truman.

No matter who takes over in the White House next Jan. 21, the Washington climate for business is bound to be balmier than now. The election, no matter who wins, will change the air, give businessmen a new chance to rebuild their currently frayed relations with many in Washington's officialdom.

Relativity—So, relatively speaking, you can't lose. But with whom you can win the most is a matter of some importance. The accompanying table shows how the candidates stand on some of the major issues, either by virtue of what they have said or done or by virtue of what their official spokesmen have said.

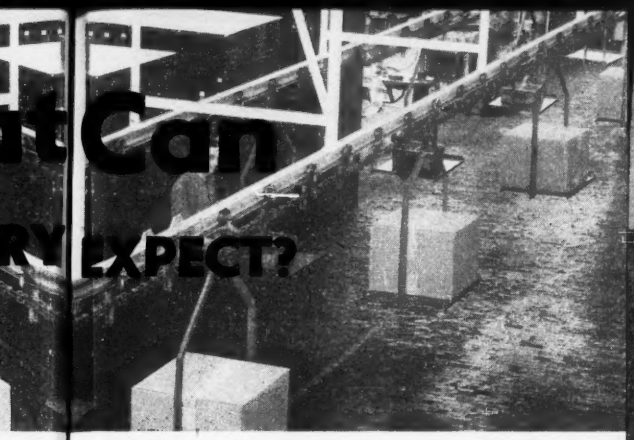
On the labor issue, both candidates once said that all that was needed were amendments to the Taft-Hartley Act. Now Mr. Stevenson has changed and calls for an entirely new law on the grounds that the Taft-Hartley legislation has received such unfavorable publicity that it's unworkable. The general holds to his stand for amendments. On the issue of government expenditures and taxes, the new President, whoever he is, would probably be dealing with fiscal 1955 before he could step in and do any real reform from a budget standpoint. The budget estimates for fiscal 1954 are now being prepared. The only chance that the President-elect could have will come after election and then only if President Truman approves a proposal by Defense Secretary Robert Lovett. Mr. Lovett has suggested that the President-elect be invited to send representatives to the budget conferences. Both candidates have pledged to attempt to reduce expenditures and taxes.

Foreign—Both candidates profess to follow a policy of foreign aid which in principle is not far from the Truman concept. The general emphasizes that he would administer it differently, more efficiently. If much the same foreign policy is followed, it will be expensive no matter who is President. The only economies from that quarter—and in turn the only way government expenditures and taxes which support the foreign policy can be reduced—is through improved administration. Thus far, Governor Stevenson has not dwelt at length on foreign policy administration. Both men emphasize that they expect general economies to come from a reduction in bureaucracy. Despite the unbalanced budget in Illinois, Governor Stevenson has demonstrated he can reduce government waste.

Both candidates oppose unnecessary controls, but the general has had more to say about them. The controls program, he points out, "has been badly bungled in the past." He indicates, as does Governor Stevenson, that he favors controls as a last resort. Both men pledge a fight against inflation, as ministers do against sin.

Small Business—The Democratic nominees have had more to say about a small business policy than have the Republicans, largely because small business is a pet project of Sen. John Sparkman, Mr. Stevenson's running mate. The senator has had a lot to do with implementing the present program of loans and other help to small business. With modifications, that would continue under Stevenson.

While the accompanying tabulation lists the more easily defined issues, others less clearcut figure in an analysis of what to expect for industry. One is: Will business-baiting continue, abate or end under Eisenhower or Stevenson? What will be the attitude of the Federal Trade Commission? Will business men be more eager to serve in federal posts under the general or the governor? Odds now are that business-baiting will abate but not end under Stevenson. He must court and hold organized labor to win and a method found tried and true under the last two administrations is to needle business. Eisenhower tactics are to win the independent labor vote and business-baiting should drop



markedly if he's in office. In any event, chances are good that the Truman tactics of driving the wedge between big and little business will be minimized under either the general or the governor.

Coming Up—The matter of the caliber of advisers and lieutenants for Eisenhower or Stevenson is still undetermined. The general, with his expected interest in industry, may attract many able men from business. But Stevenson already has good support in some industrial circles and has made a fairly good impression in Illinois. The general's method of operation has always been to surround himself with top-flight advisers. The governor has also shown a flair for picking the right man in his gubernatorial duties.

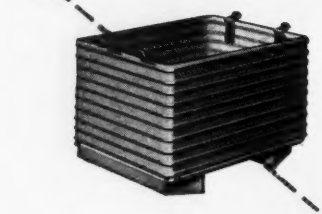
One thing to remember: Personnel changes in Washington will be slower than some people hope for because terms of commission members won't expire immediately and judges won't die or retire just because of the election results. Civil Service will also keep a whole army of government workers in their jobs.

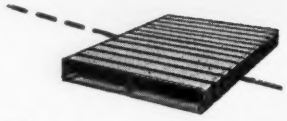
What If a Slump?—Still another issue that affects industry may bring different points of view by the two candidates. What would each do in case there's a slump in the next four years? The Eisenhower camp intimates it will have public works projects ready, particularly road jobs. Vice-Presidential Candidate Richard Nixon says he would even approve deficit spending if needed. The Stevenson camp has not yet discussed that eventuality in any detail.

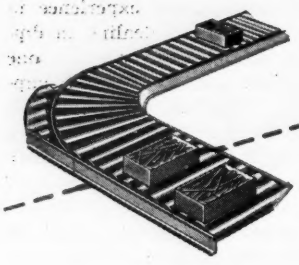
If Eisenhower is elected, industry will be dealing with a man of almost unsurpassed experience in handling men and dealing in diplomatic affairs. But even as one Republican remarked (a Taft supporter), "Eisenhower's problem is that politics and economic affairs are largely foreign to him. He's taking a quick course in them now. Will that be enough?" If Stevenson is elected, industry will be dealing with a man of great wit and intellect. But as even UAW President Walter Reuther remarked in connection with the governor's Labor Day speech, "Stevenson is definitely in touch with his subject matter, but not with the men."

WHAT INDUSTRY CAN EXPECT

ISSUE	WHAT INDUSTRY HAS BEEN GETTING UNDER TRUMAN	WHAT INDUSTRY CAN EXPECT FROM STEVENSON	WHAT INDUSTRY CAN EXPECT FROM EISENHOWER
BUSINESS CLIMATE	Hostile	Attitude undefined	Favorable
SMALL BUSINESS	A political football	Continuation of current program	Reform of present program
CONTROLS, INFLATION	Keep controls as long as possible	End controls where practical	End controls as soon as possible
TAFT-HARTLEY	Sabotage of act	Entirely new labor act	An improved Taft-Hartley
GOVERNMENT SPENDING, TAXES	Highest ever, with no pretense of economy	Attempts to reduce both	Pledge to reduce both
FOREIGN AFFAIRS	Communist containment	The same as under Truman	Less appeasement, but will try to keep U. S. out of war
MILITARY SPENDING, STOCKPILING	$51 billion a year currently for defense	About the same	High spending, but will reduce waste
BUREAUCRACY	No attempt to reduce federal payrolls	Some reductions	A try at Hoover recommendations
CORRUPTION	No real attempt to stop it	Admission of the mess. Clean-up hampered by embarrassing political ties	Pledges clean-up and restoration of integrity in government
TIDELANDS	Federal jurisdiction	Federal jurisdiction	State jurisdiction
FARM POLICY	Support of farm prices, coupled with paternalism and coercion	Support of farm prices, less paternalism, coercion	Support of farm prices, accent on restoration of farmers' independence
RESOURCES DEVELOPMENT	As ambitious federal projects as possible	Federal development	Federal development where state and private industry can't do job







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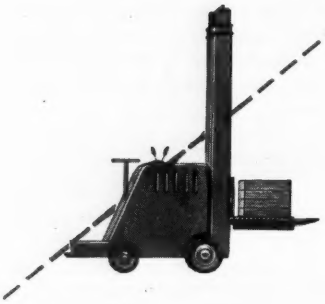

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NATIONAL STEEL CORPORATION

By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom

Tight Fit Breaks Bottleneck

Hand lapping follows semi-final machine lapping to get a pump valve fit with extremely close tolerances. Skilled hands at Fisher Body's Flint Plant No. 1 make this hydraulic pump used to raise and lower the 90-mm cannon in T-43 tanks. At Army Ordnance's request Fisher made the pilot model and now is filling its own Grand Blanc tank plant needs and has reserve capacity. The pump weighs 14 pounds, has 61 separate parts and operates from —40 to 160 degrees F

Did you ever wonder why the United States auto industry surpasses that of the rest of the world? The answer is: "America's freedom"

DETROIT

DAY - BY - DAY activities of the automotive industry occasionally need to be set in their proper perspective by a fast glance backward at history. Opportunity to do this appropriately comes from a speech in celebration of the Centennial of Engineering in the "transportation" symposium at Chicago.

One of the foremost chroniclers of things automotive was asked by Charles Kettering to wheel out in words the by-gone steam buggies, electrics, and gasoline propelled horseless carriages, and explain how these have fitted into engineering's first 100 years. Christy Borth, the man whom "Boss Ket" approached, is himself no engineer, but his ability to tell of men who are, and particularly those associated with the automotive industry, is without equal. As educational director of the Automobile Manufacturers Association he is in frequent contact with other historians who scour AMA's extensive library to find the answers to four more troublesome questions.

Four Puzzlers—These, Mr. Borth believes, are the essence of American automotive engineering's development. "Why did the United States take the leadership in this development which was initially European? Why did Detroit become the Motor City when at least six other American population centers seemed to have better advantages? Why did gasoline, rather than steam and electricity, become the chosen power source for automobiles? How, when, and why did the automobile, originally a luxury, become a power plant and transport-tool so essential to the American people that our economy would now collapse without it?"

Anyone with curiosity toward the industry finds there is no pat answer to these questions. Christy Borth sums up the fortuitous accidents and coincidences which are his answers to these four questions with: "Certainly no human mind, nor any combination of human minds could have planned it that way." He concludes that one concept—America's God-given inalienable right to freedom—is basic.

The Granddaddy—Forefather of the locomotive and the automobile was a steam-powered tractor built by a French Army captain about 1770. Ancestor of the steam engine was an internal combustion engine, built in 1680, which derived its power from exploding gunpowder. Steam was introduced to produce a vacuum to pull the piston of the engine down. Mass production was likewise not an American idea. Englishman Matthew Boulton, before the American Revolution, had made a fortune by his skill in manufacturing in quantity lots buttons and jewelry. His idea was derided and finally strangled by snobbery. Wealthy Britons had no desire to have imitations of their baubles worn by the masses. Mr. Boulton backed James Watt's pressure - operated steam engine instead and forgot about making things in quantity. A vehicle using a hydrocarbon internal combustion engine and equipped with prototypes of spark plugs and distributor took to a Luxemburgian road in 1862. The European stage in the 1890s was set for automobiles while Americans were puttering around rather aimlessly in the wings.

And yet in the 56-year history of the American automobile industry, this country's factories have turned out over 123 million cars, trucks and busses while the rest of the world has made only about a fourth that number. This is not, says Mr. Borth, because of any peculiar geographic advantages, nor any exclusive claim to inventive genius. Freedom, he is convinced, is the answer.

Lucky Accidents — Detroit was

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off the beaten path. At the turn of the century after having passed an early peak as a port and trading center, and after its great stands of white pine had been exploited and exhausted, Detroit was launched into its greatest era by two accidents. These proved also the turning point which led the industry to internal combustion engines ultimately.

On Jan. 10, 1901, the "Spindletop" gusher at Beaumont, Tex., blew in. Its driller—Capt. Anthony Lucas—was more interested in sulphur and salt that he was in petroleum, and his backer—"Beta-million" Gates—who was busy merging iron and steel companies into the first billion dollar corporation, is said to have asked Lucas what he would do with oil if he found it—feed it to Texas longhorns?

Then, eight weeks later, Ransom E. Olds' factory in Detroit caught fire. The only thing saved of a thriving business in engines and boilers for marine and industrial use was a one-cylinder, curved-dash, gas-powered roadster, which Olds had been tinkering with when the rest of the business didn't require full attention. Left with only this car and a small building which had been a foundry, Mr. Olds improvised the technique which has made the industry—subcontracting. He turned the foundry into a crude final assembly plant and farmed out the parts of his "merry Oldsmobile" to small shops.

Metamorphosis—What took the infant industry's product out of the luxury class and made it the transport-tool it is? The Wall street "smart money" boys can claim no credit. The "auto game" was no place for professional financial risk-taking before 1912, and when they came in they mostly picked the wrong nags to back. Financial help for automakers came principally from ordinary people who put up money, apparently foolhardily, in such people as Henry Ford even after he had suffered two failures. The car went out of the luxury class some time in the '20s, according to Mr. Borth's reckoning. During that decade fast-drying synthetics were introduced, so was safety glass, a highway construction program began, using earthmoving equipment

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,691	656,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	560,947	653,682
July	246,461	522,858
August	323,216*	571,442
September		505,758
October		558,971
November		480,199
December		402,729
Total		7,179,161

Week Ended	1952	1951
Aug. 9	43,964	97,351
Aug. 16	36,890	129,661
Aug. 23	109,588	138,797
Aug. 30	122,632	137,479
Sept. 6	110,005	103,224
Sept. 13	140,000*	136,150

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

converted from war surplus vehicles, wide continuous sheet steel capable of being deep drawn was developed, and the automobile stopped being a fair-weather plaything when closed models, in 1925, first overtook open cars in sales.

Another Accident — American automobile engineering was almost as much an accidental development as the cars themselves. Shortly after 1900 a technical department was set up in one of the AMA's parent organizations to work out standards for bolts and nuts and other fittings so car owners would not have to go to the original factory for these parts. From that group, many of whose members had only limited claim to the title of "engineer," grew up the Society of Automotive Engineers. One of its earliest technical papers dealt with the addition of ground cork and wood sawdust to quiet noisy gearboxes. Engineering among the automakers at that time had been called "monkey-wrench science," and many of its greasy practitioners were held in contempt.

Ingenuity Is Strong as Ever

Looking at today's production scene you discover that all the ingenuity of that earlier period has not been expended. The hangover of the steel strike continues to give headaches to production men, despite the almost miraculous recovery which has now pushed output over the 1951 figures for the first time. Plants are making do with material they would normally return to the steel mills as unsuitable. Operator of a forge shop in Detroit describes his problem this way: Defects in the steel frequently make it necessary to stop the forging of ring gears midway, let the blank cool, then hand-grind out the flaws, reheat the metal and finish the forging. It's better and cheaper to do this than send back the steel and hope for replacement.

By piecing out their materials and by extensive trading to balance out inventories automakers are shooting for fourth-quarter production goals which may set new records for that period. Although model changes are extensive in most cases, shutdowns will be held to a minimum. At Plymouth's Detroit plant, for example, the two assembly lines will operate, one "building up" on 1953 models while the other "builds down" on 1952s.

Fighting for Position

Chrysler and Ford are in a tooth and nail fight over the No. 2 industry position. Ford outproduced Chrysler in passenger cars in second quarter and further increased its percentage in July and August. Other industry position upsets occurred during this period, Nash outproducing Studebaker, as the most significant of these. Reallocation of materials is one of the prizes Ford and Nash are shooting for, not to mention the prestige value.

Men Wanted

Almost as much as materials as a limiting factor on the number of units which can be turned out in the remainder of the year is the sudden shortage of manpower. One man last week said he is able to hire only about half the weekly quota he needs to expand his force and meantime he loses some of his old hands. The net gains are small. Production standards are increasingly becoming a bone of contention in the ranks of organized autoworkers. Labor disturbances may well keep automakers from realizing their fourth-quarter schedules.

Latrobe

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- If you are not using *"Desegatized"* Steels, Latrobe offers you a simple, yet convincing, method of checking the steels you are using against *"Desegatized"* quality.
- Ask your Latrobe representative for details.

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"Bill, making or losing money today

can depend on

The Turn of a Screw!"

"Stop pulling my leg," Bill retorted skeptically.

"I'm not exaggerating. You can't afford to take your fasteners for granted," Bob insisted. *"I'm saving time—and time is money—just by following the RB&W man's suggestion to use another kind of screw in my TV sets."*

"What kind?" asked Bill.

"RB&W's new SPIN-LOCK Screw," answered Bob. *"It has a patented feature—ratchet-like teeth under the head—that not only locks into the surface and holds tighter, but also speeds assembly. It does away with extra parts and special handling. Bet your switches could use 'em, Bill."*

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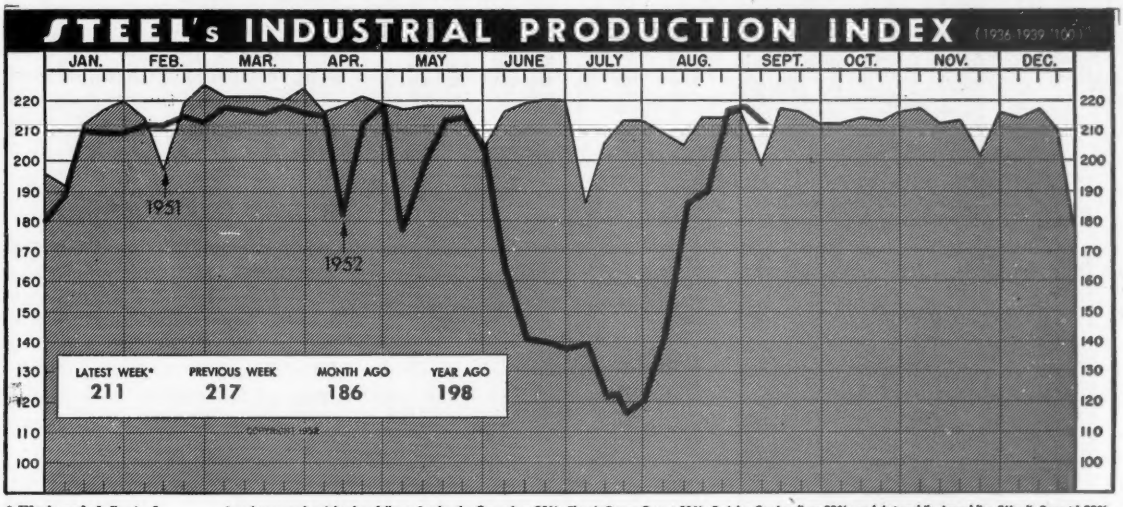
RB&W 107 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

The Business Trend


STEEL's INDUSTRIAL PRODUCTION INDEX
(1936-1939 "100")
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110 100
1951
1952
LATEST WEEK* 211
PREVIOUS WEEK 217
MONTH AGO 186
YEAR AGO 198

* Week ended Sept. 6 Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.

Industrial machinery regained lost momentum faster than many economists believed possible at the end of the steel strike. Index dips slightly during the holiday week

INDUSTRY is putting its shoulder to the wheel in its drive to regain output lost by the steel strike.

Metalworking companies are returning to pre-strike output levels faster than many economists formerly believed possible. At the end of the steel strike, these economists were saying that the Federal Reserve Board's industrial production index would probably rise 14 points in August to 205 per cent of the 1935-1939 average. Instead, the FRB index shot up 21 points last month to 212 per cent. That's the highest reading since April, when the index stood at 216 points. Present increases in industrial momentum indicate another index rise for September. The index will probably reach 220 per cent this month.

No Strikes—The index may hit 225 in October and remain at about this level through November and December. This height will be reached only if the nation is unafflicted by a coal strike or another large industry walkout.

As many industrial operations closed down for Labor Day, STEEL's industrial activity index dipped six points to 211 per cent of the 1935-1939 average in the week ended Sept. 6. Freight car loadings, electric power output and auto-truck assemblies declined slightly that week. Steel production moved up 1.5 points that week to 100 per cent of rated capacity. In the corresponding week last month, the index reached 186 per cent, while in the week before the strike it stood at 218 per cent of the 1935-1939 average.

Auto Output Soars . . .

The auto industry is shoving operations into high gear to recoup losses from the steel strike. Makers of passenger cars are scheduling overtime and second-shift assemblies.

U. S. plants are expected to roll out 455,000 passenger cars during September, the highest monthly volume since June, 1951, says *Ward's Automotive Reports*. Output in the final quarter of 1952 may climb to 1.2 million passenger cars. That's the best fourth-quarter turnout since 1936, with the exception of the 1,668,219 units produced in October-December, 1950.

Indicating the drive to boost production, U. S. and Canadian automakers produced 110,005 passenger cars and trucks in the week ended Sept. 6. This marks a decline of only 11 per cent from the previous week's total, while the usual drop is about 20 per cent during the Labor Day week. The 1952 output totaled 3.7 million cars and trucks, compared with 5.3 million in the same period in 1951.

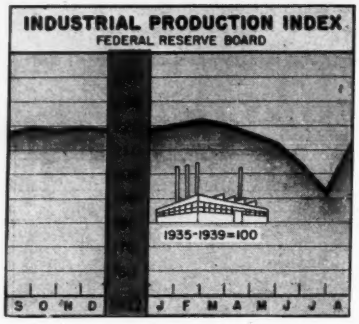
Steel Turnout Edges Up . . .

Steel plants are up to the high output levels attained before the strike.

Production reached 2,108,000 net tons steel for ingots and castings in the week ended Sept. 13, says the American Iron & Steel Institute. This output figure compares with 2,055,000 tons produced in the previous week and 1,866,000 of the same week, a month ago. In the last full week before the strike, the nation's plants turned out 2,021,000 net tons steel for ingots and castings.

Store Sales Jump . . .

Department store sales in August made the largest month-to-month increase since January, 1951. Total sales rose 3 per cent above August of last year to 114 per cent of the 1947-1949 average, reports the Federal Reserve Board. This compares with 105 per cent in July

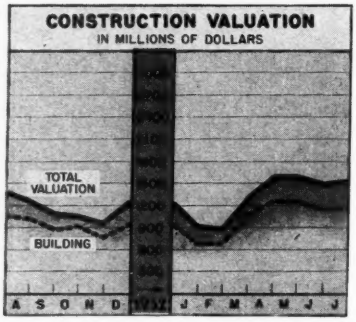


Industrial Production Index

1935-1939=100

	Total Production 1952	1951	Iron, Steel 1952	1951	Non-ferrous 1952	1951
Jan.	220	221	261	255	215	224
Feb.	222	221	261	252	217	218
Mar.	220	222	262	263	218	212
Apr.	216	223	245	264	219	210
May	211	223	245	263	220	206
June	203	221	142	261	212	205
July	191	222	127	263	207	199
Aug.	212	217	...	254	...	198
Sept.	...	219	...	257	...	201
Oct.	...	218	...	261	...	202
Nov.	...	219	...	261	...	209
Dec.	...	218	...	263	...	210
Avg.	...	220	...	259	...	207

Federal Reserve Board.

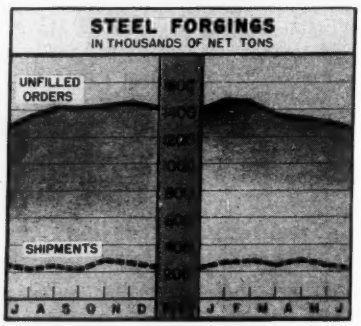


Construction Valuation

(37 States)—In Millions of Dollars

	Total 1952	1951	Building 1952	1951
Jan.	902.1	1,043.2	695.4	881.9
Feb.	885.2	1,140.5	697.8	962.3
Mar.	1,321.2	1,267.4	1,056.0	1,043.8
Apr.	1,597.5	1,375.0	1,243.9	1,108.9
May	1,563.6	2,573.0	1,216.2	2,295.0
June	1,488.8	1,408.9	1,133.3	1,098.4
July	1,511.3	1,379.8	1,170.8	1,084.7
Aug.	.....	1,262.8	.....	1,043.5
Sept.	.....	1,082.9	.....	884.2
Oct.	.....	1,051.4	.....	914.4
Nov.	.....	931.8	.....	771.6
Dec.	.....	1,234.3	.....	939.1
Total	.....	15,751.6	.....	13,027.9

F. W. Dodge Corp.

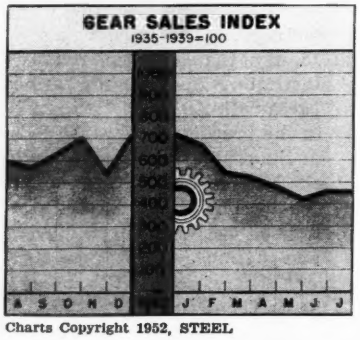


Steel Forgings

Thousands of Net Tons

	Shipments 1952	1951	Backlogs 1952	1951
Jan.	271*	138	1,472*	709
Feb.	277*	129	1,464*	781
Mar.	266*	161	1,360*	875
Apr.	277*	154	1,349*	924
May	263*	266*	1,319*	1,208*
June	224*	249*	1,265*	1,264*
July	...	220*	....	1,361*
Aug.	...	240*	....	1,436*
Sept.	...	225*	....	1,419*
Oct.	...	280*	....	1,427*
Nov.	...	256*	....	1,446*
Dec.	...	232*	....	1,411*

U. S. Bureau of the Census. * Data for these months based on reports from commercial and captive forge plants with monthly shipments of 50 tons or more. Previous data based on reports from commercial forge shops producing 3600 tons or more per year.



Gear Sales Index

1935-1939=100

	1952	1951	1950
Jan.	670.6	764.6	280.2
Feb.	539.5	809.1	272.9
Mar.	517.1	830.7	358.4
Apr.	478.7	742.5	328.6
May	425.9	667.1	363.1
June	452.3	800.9	401.0
July	453.9	589.1	410.7
Aug.	....	564.2	617.4
Sept.	....	630.1	654.5
Oct.	....	703.4	564.8
Nov.	....	530.0	554.9
Dec.	....	716.5	680.4

American Gear Mfrs. Assn.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Durable Goods ....Aug. 18	Ironers .....Aug. 25	Ranges, Elec. .....July 28
Employ., Metalwkg.Sept. 8	Machine Tools ....Sept. 1	Ranges, Gas .....July 28
Employ., Steel ....Apr. 28	Malleable Castings..Aug. 11	Steel Castings ....Aug. 11
Fab. Struc. Steel ..Sept. 1	Pumps .....Sept. 1	Steel Shipments ...July 23
Foundry Equip. ...Sept. 1	Prices, Consumer ..Sept. 8	Vacuum Cleaners ..Aug. 18
Freight Cars .....Aug. 25	Prices, Wholesale..Sept. 8	Wages, Metalwkg..Sept. 8
Furnaces .....Aug. 25	Radio TV .....July 21	Washers .....Aug. 18
Gray Iron Castings..Aug. 11	Refrigerators .....July 28	Water Heaters ....Aug. 18

and 109 per cent in August, 1951. Sales in the first eight months of 1952, dipped 2 per cent under department store sales in the same months in 1951.

In the week ended Aug. 30, store sales rose 4 per cent above last year, compared with an increase of 3 per cent in the previous week and 2 per cent in the week ended Aug. 16.

Consumer Credit Climbs . . .

A jump of $327 million in time buying pushed consumer credit to an all-time high of $21.2 billion on Aug. 1, says the Federal Reserve Board. Single payment loans rose $6 million, but this was offset by drops of $89 million in charge accounts and $2 million in service credit.

The $21.2 billion outstanding at the end of July was $242 million above the previous month and $2 billion more than at the same time in 1950.

Power Output Strong . . .

Electric power is continuing at record output levels, despite any adverse effect of the industrial slowdowns caused by the steel shortage. Utilities produced 32.5 billion kwhrs of electricity in July, says the Federal Power Commission. This is the highest production for the month, exceeding the July, 1951, output by 6.4 per cent and the June total by 3.2 per cent. Water power plants turned out 26 per cent of the total, and fuel powered plants produced the remaining 74 per cent.

In the week ended Aug. 30, electric energy distributed by the light and power industry reached 7.6 billion kwhrs, says Edison Electric Institute. That's 7 per cent over the same week in 1951. Output dipped to 7 billion kwhrs in the week ended Sept. 6, as many manufacturers closed for Labor Day.

Freight Loadings Plunge . . .

Freight car loadings plunged 12.8 per cent from the preceding week, as the soft coal miners observed their mourning period during the week ended Aug. 30. Loading of revenue freight totaled 727,344 cars in the week ended Aug.

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	100.0	98.5	99.0
Electric Power Distributed (million kwhr)	7,000[1]	7,270	6,795
Bituminous Coal Output (daily av.—1000 tons)	328	1,833	1,766
Petroleum Production (daily av.—1000 bbl)	5,900[1]	6,284	6,278
Construction Volume (ENR—millions)	$109.9	$353.9	$160.5
Automobile, Truck Output (Ward's—units)	110,005	122,632	103,224
TRADE			
Freight Car Loadings (unit—1000 cars)	700[1]	727	732
Business Failures (Dun & Bradstreet, number)	140[1]	132	116
Currency in Circulation (millions)[3]	$29,391	$29,129	$28,262
Dept. Store Sales (changes from year ago)[3]	+4%	+3%	−3%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$12,915	$15,069	$12 043
Federal Gross Debt (billions)	$263.2	$263.1	$256.7
Bond Volume, NYSE (millions)	$10.1	$16.3	$12.4
Stocks Sales, NYSE (thousands of shares)	4,337	4,533	7,453
Loans and Investments (billions)[4]	$75.6	$75.3	$70.5
United States Gov't. Obligations Held (billions)[4]	$32.4	$32.4	$30.9
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	181.40	181.40	171.92
STEEL's Nonferrous Metal Price Index[6]	223.2	223.2	224.6
All Commodities[7]	N.A.[8]	111.9	115.0
All Commodities Other Than Farm and Foods[7]	N.A.[8]	112.8	116.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040 [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100. [8]Not Available.

30, says the Association of American Railroads. This total is 12.3 per cent below the same week in 1951 and 14.6 per cent below the same week, 1950. Coal loading amounted to 39,249 cars, a drop of 111,476 cars below the same week last year and 124,765 below the preceding week, this year. Ore loading reached 94,552 cars, an increase of 9697 cars above a year ago loadings.

New Companies Increase . . .

New business incorporations rose above the year ago company formations for the sixth consecutive month in July. The July total at 7549 incorporations was slightly less than the June number and 17.4 per cent above the 6428 new businesses in July, 1951, says Dun & Bradstreet Inc. New company formations in the first seven months of 1952 totaled 54,996. This figure is more than 7.4 per cent above incorporations in the similar 1951 period, but 7.8 per cent fewer than during the corresponding period in 1950.

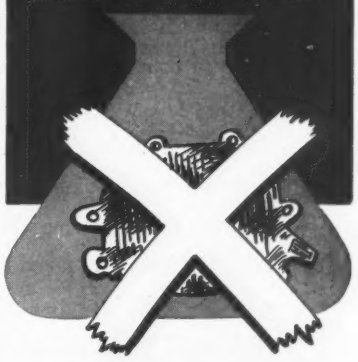
Stoker Sales Rise . . .

Sales of mechanical stokers in July rose 21 per cent over the same month, 1951. Factory sales of mechanical stokers totaled 1916 units in July, compared with 1896 in June and 1582 units sold in July, 1951. Stokers for private houses rose from 1020 units to 1268 over the year, while large apartment house and medium-sized commercial types rose from 181 to 244 units in July, 1952. Other July totals are: Small apartment type, 117 units; small industrial type, 206 units.

Trends Fore and Aft . . .

Metalworking companies in 1952 borrowed $897 million by Aug. 27 . . . Increased sales and declining inventories will enable General Electric Co. to increase production of refrigerators at its Erie, Pa., plant. . . Business failures dipped to 132 mortalities in the week ended Aug. 28, compared with 164 failures in the same week, 1951. . . Bank clearings dropped 14 per cent in the holiday week ended Sept. 3. . . Total wholesalers' sales rose 4 per cent during July . . . Shipments of aluminum wrought products in July totaled 149 million pounds, 4 per cent below June and 12 per cent above shipments in July, 1951 . . . Magnesium wrought products shipped in July totaled 1400 pounds, or 2 per cent under June and 1 per cent above the corresponding month in 1951.

Remove Occluded Salts with DU-LITE "SD"



"Creeping salts", the residual reaction often following the black oxidizing of metals, can now be removed without special equipment with Du-Lite "SD". This new compound eliminates special rinses and extra handling which have previously been required. "SD" was developed specifically to remove trapped salts from the surface of porous, laminated, sintered, spot-welded, and similar parts.

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A self-emulsifying petroleum product, S.E.C.O. forms a stable white emulsion when mixed with water. Its cooling and lubricating qualities make it particularly effective in the high-speed precision machining of ferrous and nonferrous metals. S.E.C.O. keeps machines clean, has a pleasant odor, and prevents rusting of parts between operations.

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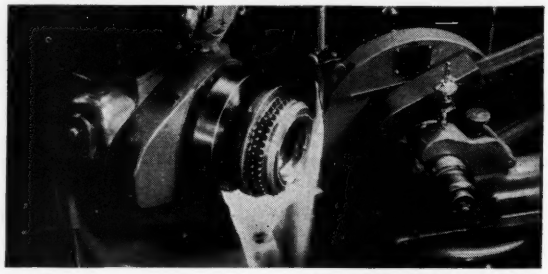
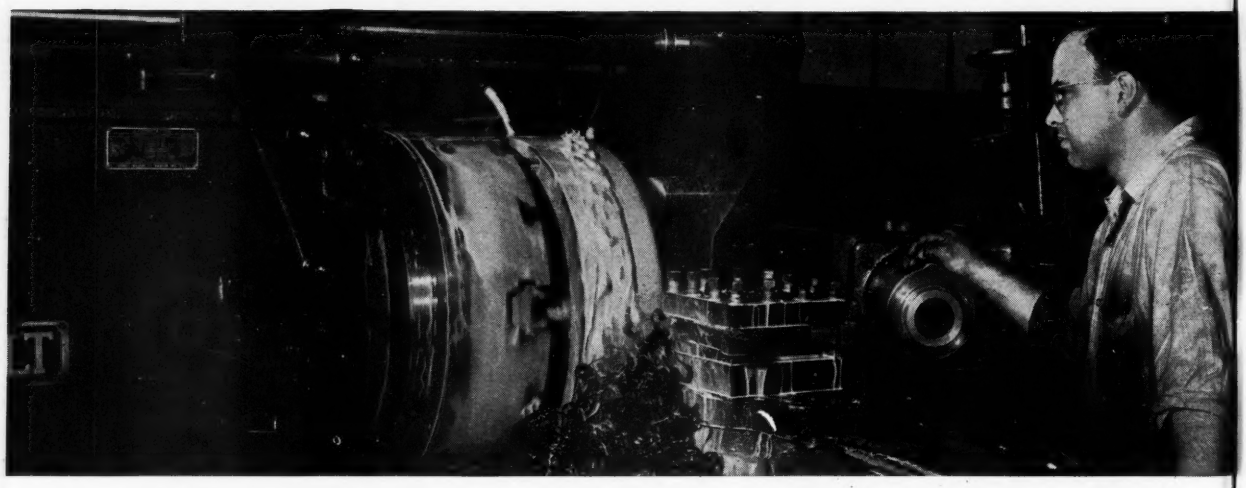
MACHINE: 2" automatic tapping machine • Parts: pipe fittings Metal: malleable iron • Operation: threading and chamfering 1½" 45° elbow • Cutting Speed: 75 sfm • Tools: high speed • Production: 306 pieces per hour • Cycle Time: 11¾ seconds • Cutting Oil: 1 part S.E.C.O. to 10 parts water



COURTESY BROWN& SHARPE MFG. CO.

MACHINE: Brown & Sharpe No. 2 Universal Grinding Machine Part: screw machine spindle sprocket • Metal: AISI-C1107 • Operation: grinding 90° included angle • Method: plunge-cut ground periphery of wheel • Grinding Oil: 1 part S.E.C.O. to 40 parts water



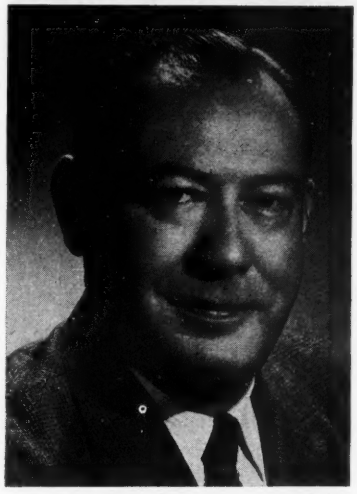
MACHINE: Gisholt turret lathe, model 4L • Part: 20" press mold shell, 22⅝" O.D., 6" depth, 20½" I.D. • Operation: turning and boring rough forgings • Materials: 40 to 50 carbon steel • Tools: Firthite carbide • Feed: .012 at 31 rpm • Cut: ½" to ¾" on O.D. and boring • Cutting Oil: 1 part S.E.C.O. to 10 parts water

SUN INDUSTRIAL PRODUCTS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL

SUNOCO

Men of Industry



J. P. D. GERRESE
. . . chief eng. at Gary for Nat'l Tube

J. P. D. Gerrese was appointed chief engineer of the Gary, Ind., plant, **National Tube Division,** U. S. Steel Co. Associated with U. S. Steel since 1925, he has been control engineer of National Tube's construction department since 1947.

C. Robert McCloskey was appointed sales manager, **Furnace Engineers Inc.,** Pittsburgh. He had been with Salem Brosius Inc.

C. W. Hawley, former sales manager, products engineering division, **Jeffrey Mfg. Co.,** Columbus, O., was named manager, original equipment sales, merchandise division. He recently returned to the company from six months with NPA in Washington. He is replaced in his former position by **Lester L. Grooms.**

Lawson Van Ormer was appointed superintendent, tin plate department, **Aliquippa Works Division,** Jones & Laughlin Steel Corp.

Edward E. McGinley, division superintendent of steel production for **U. S. Steel Co.'s** Ohio Works, Youngstown, was promoted to division superintendent of steel production, Homestead Works. He is replaced by **Ervin L. Wentz** at the Ohio Works where **Edgar R. Holstein** was named open-hearth superintendent.

RAY WRIGHT
. . . Stronghold Pacific sales mgr.

Ray Wright was appointed sales manager, **Stronghold Pacific Corp.,** Los Angeles. He joined the company in July, 1951, and previously was connected with Fibre & Metal Products Co. and Rivco Inc. in the capacity of salesman and sales manager in the brake lining and rivet department.

Stanley J. Roush, previously president of Kerotest Mfg. Co., is the newly elected president and general manager of **Atkins Saw Division,** formerly E. C. Atkins & Co., Indianapolis, which was acquired by Borg-Warner Corp. last month. Other officers of the Atkins organization include new vice presidents **H. G. Ingersoll,** who also is a vice president of Borg-Warner and president of its Ingersoll Steel Division, and **L. G. Porter,** also treasurer of Borg-Warner. **D. H. Potter,** secretary-treasurer of the company prior to acquisition, continues in the same capacity. **Elias C. Atkins,** who is relinquishing the presidency, and **W. A. Atkins,** previously a vice president, were elected members of the new board of directors.

Jones & Laughlin Steel Corp., Pittsburgh, appointed **T. H. T. Brady** to the newly created position of assistant manager of sales, cold finished products.

H. H. WITTE
. . . sales engineer, Roylyn Inc.

H. H. Witte was appointed sales engineer, **Roylyn Inc.,** Glendale, Calif. For the last eight years he has represented Precision Engineering Co., attached to its Sacramento, Calif., office.

Courtlandt S. Gross, vice president-general manager, **Lockheed Aircraft Corp.,** Burbank, Calif., was elected executive vice president of the entire Lockheed Corp., including both the California and Georgia divisions and several subsidiaries. **Burt C. Monesmith,** recently promoted from manufacturing manager to vice president-manufacturing, was advanced to vice president and general manager, California division.

Everett S. Hoff was appointed production manager-bars and tubes for **Columbia Steel & Shafting Co.,** Carnegie, Pa. He formerly was production manager, Summerill Tubing Co. division.

W. E. Watson, manager, pump manufacturing division, **Fairbanks, Morse & Co.,** was promoted to assistant to the manager of manufacturing with headquarters in Chicago. **Paul R. Flood,** former manager of manufacturing at the Beloit, Wis., Works, was transferred to Pomona, Calif., as general manager of the Pomona Pump Works to succeed **Charles L. Barrett,** now a con-

sultant to the pump division. **L. H. Kessler** was named chief hydraulic engineer at Beloit to succeed **R. C. Glazebrook** who, since last March, has been on special assignment to the general manager with duties relating to the new Fairbanks-Morse plant now under construction in Kansas City, Mo. **R. B. Craig**, as assistant to the president, will work on special assignment with headquarters in Washington. **S. L. Fry**, formerly manager of the Omaha diesel department, was moved to Chicago as assistant manager, pump sales division.

Edmund D. Bachand was made manager, Detroit branch office, **Moore Products Co.**, to succeed **J. E. Gambrill**, now manager of a new branch office in New York.

Midvale Co., Nicetown, Philadelphia, appointed **Arthur I. Schell** manager of operation methods at its Nicetown plant.

Harold F. Keyes Jr. was elected an assistant secretary of **Brown & Sharpe Mfg. Co.**, Providence, R. I.

Clark C. Sorensen was appointed assistant to the president of **Harris-Seybold Co.**, Cleveland. Since 1944 he was director of personnel. **Charles J. Conlin Jr.**, formerly personnel manager of the Seybold Division in Dayton, O., was transferred to Cleveland as manager of personnel relations for the company.

ARTHUR HJORTSBERG
. . . asst. chief metallurgist, U. S. Steel

United States Steel Co. appointed **Arthur Hjortsberg** as assistant chief metallurgist, with offices in Pittsburgh. His entire career in the steel industry has been with U. S. Steel at its Gary Works, where, since 1945, he has been assistant general superintendent, operating division.

Whitfield Chemical Co., Detroit, appointed **Herman G. J. Grosser** as Cleveland district sales manager.

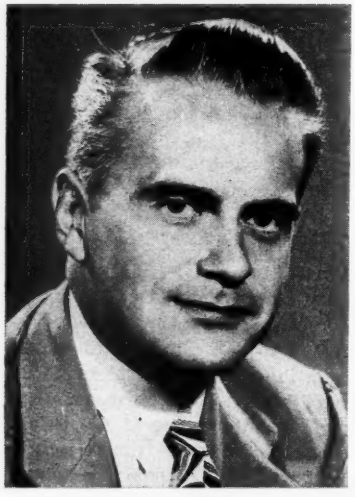
Robert W. Crozier was appointed regional manager in charge of the Pittsburgh and Cleveland offices of **Electro Metallurgical Co.** A new sales office in Houston has been established with **Herman J. Pfeifer** as district manager.

At **Buffalo Bolt Co.**, Buffalo, division of Buffalo Eclipse Corp., **Lawrence L. Hurd** was promoted to director of public relations of the parent company, and is succeeded as assistant general sales manager by **Colman Curtiss Jr.**

Douglas C. Lynch was elected vice president of sales, **Brush Development Co.**, Cleveland. He formerly held the position of senior staff executive of Willys Overland Corp. in Toledo, O.

Eugene C. Bauer Jr., first vice president, Kensington Steel Co., was elected a director of Pioneer Engineering Works Inc., Minneapolis. He succeeds **Philip W. Moore**, formerly president of Poor & Co. and a member of that board, who resigned from the Pioneer board because of ill health. Pioneer and Kensington are both subsidiaries of **Poor & Co.**, Chicago. **Christian E. Jarchow**, executive vice president and comptroller of International Harvester Co., was elected a director of Poor & Co. to fill a vacancy on the board created by the death of **Averill Tilden.**

Elliott Co., Jeannette, Pa., appointed **Willard G. Cook** manager of a newly established industry engineering department with offices at 715 Frick Bldg., Pittsburgh. He will co-ordinate activities of apparatus divisions, particularly as

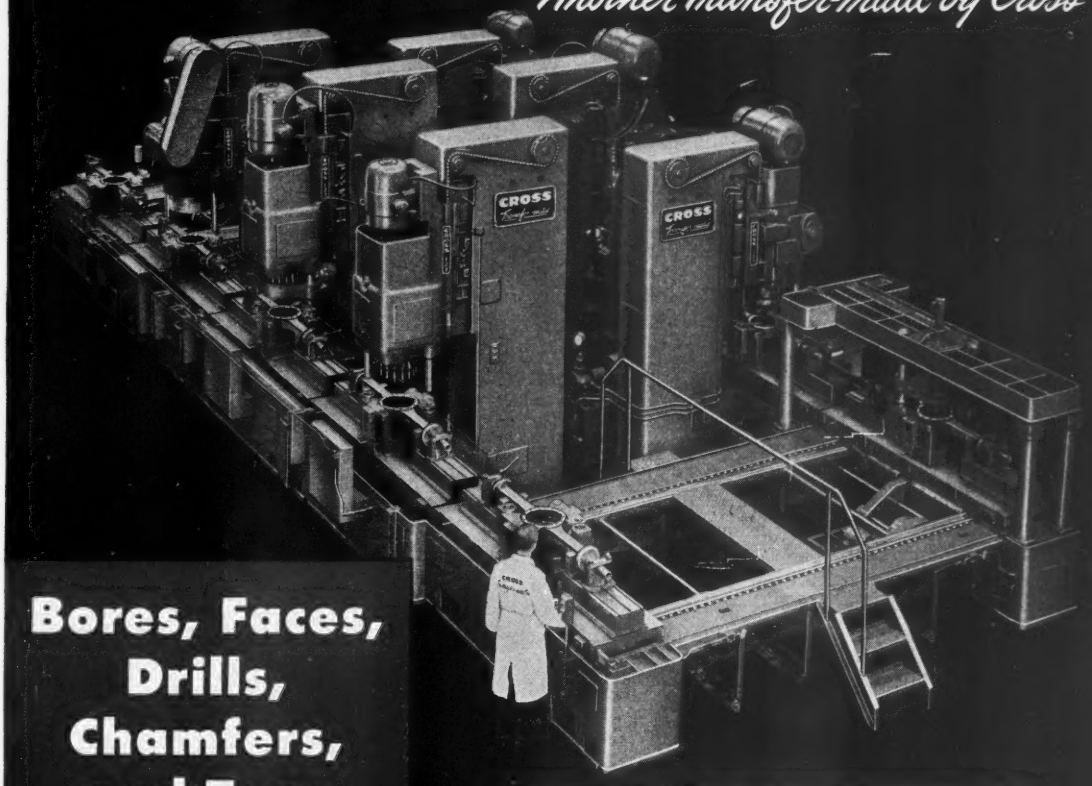


CLARK C. SORENSEN
. . . assists president of Harris-Seybold

ROBERT W. CROZIER
. . . reg. mgr. at Electro Metallurgical

WILLARD G. COOK
. . . heads new dept. at Elliott

Another Transfer-matic by Cross



Bores, Faces, Drills, Chamfers, and Taps Axle Housings

- ★ Rough and finish bores banjo hole; rough and finish faces banjo face; drills and chamfers holes in banjo face; drills, spot-faces and taps drain hole.
- ★ 35 pieces per hour at 100% efficiency.
- ★ Capacity for housings from two and one-half to five tons.
- ★ Eight stations—one for loading, one for targeting, six for machining.
- ★ Palletized work holding fixtures hold part securely during all operations.
- ★ Phonograph record finish for the banjo face.
- ★ J.I.C. standard electrical and hydraulic construction with stranded wires.

Established 1898

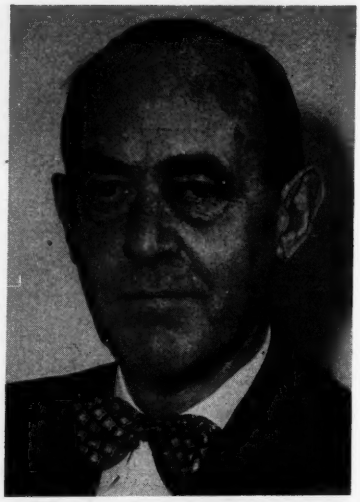
THE CROSS CO.

DETROIT 7, MICHIGAN

Special MACHINE TOOLS

R. E. O'NEILL
. . . asst. in sales, Atlantic Steel

CLIFFORD W. SPONSEL
. . . heads ACF aircraft div.



FRED H. LUCAS
. . . sales position at U. S. Steel Co.

connected with the metalworking industry.

R. E. O'Neill was appointed assistant general manager of sales, **Atlantic Steel Co.**, Atlanta. **G. O. Stevenson** was named manager, rolled products sales division. In his new position, Mr. O'Neill assumes responsibility for administration of the sales department and various sales divisions handling mill products.

C. L. Warner was placed in charge of sales activities of **Thomas Strip Division**, Pittsburgh Steel Co., Pittsburgh.

Thompson & Co., Oakmont, Pa., appointed **M. D. Phelps** co-ordinator of development and sales of Vinsynite, a pretreatment coating that adheres to all metal surfaces.

Westinghouse Electric Corp. appointed **Donald E. Jenkins** plant manager of its new Vicksburg, Miss., lighting division plant, and **Thomas G. Cameron** as superintendent of manufacturing there.

American Car & Foundry Co. announces formation of an aircraft division with **Clifford W. Sponsel** in charge. Headquarters will be at the St. Charles, Mo., plant where the principal activity of the new division will be construction of fuselage sections for the Air Force's latest stratojet bomber, the B-47. Also announced is election of **James F. Clark** as vice president in charge of finance and **John F. Burditt** as treasurer.

Meryl H. Geisking was appointed to the newly created position of assistant to the president of **Tennessee Coal & Iron Division**, U. S. Steel Co., Birmingham. Since 1933 he has been vice president and general manager-sales, in which position he is succeeded by **David A. Challis Jr.**

Austin Goodyear was elected a director of **Hewitt-Robins Inc.**, Stamford, Conn. He is general manager of two divisions of the company, the rubber division in Buffalo and the conveyors division in Passaic, N. J., and Philadelphia.

Fred H. Lucas succeeds **A. H. Warren Jr.**, retired, as manager of structural and plate sales in **United States Steel Co.'s** sales division. He joined Carnegie Steel Co. in 1930. Since 1947 he has been assistant manager of sales at Pittsburgh.

John E. Angle was made general superintendent of the Gary, Ind., sheet and tin mill of **U. S. Steel Co.**, effective Oct. 1, to succeed **Charles A. Ferguson**, retiring. **Charles J. Hunter** becomes assistant general superintendent, Gary Works. **Ralph W. Dickson** was appointed division superintendent, west mills, and **Edwin J. Blanning** division superintendent, central mills.

Thomas F. Lynch was appointed associate general counsel and **Benjamin L. Rawlins** assistant general counsel and secretary, **United States Steel Corp.**, New York.

Harry C. Martin, director of research and development, **Carborundum Co.**, Niagara Falls, N. Y., was elected a vice president of the company.

OBITUARIES...

Henry G. Sommer, 53, chairman of the board, **Keystone Steel & Wire Co.**, Peoria, Ill., died Aug. 30.

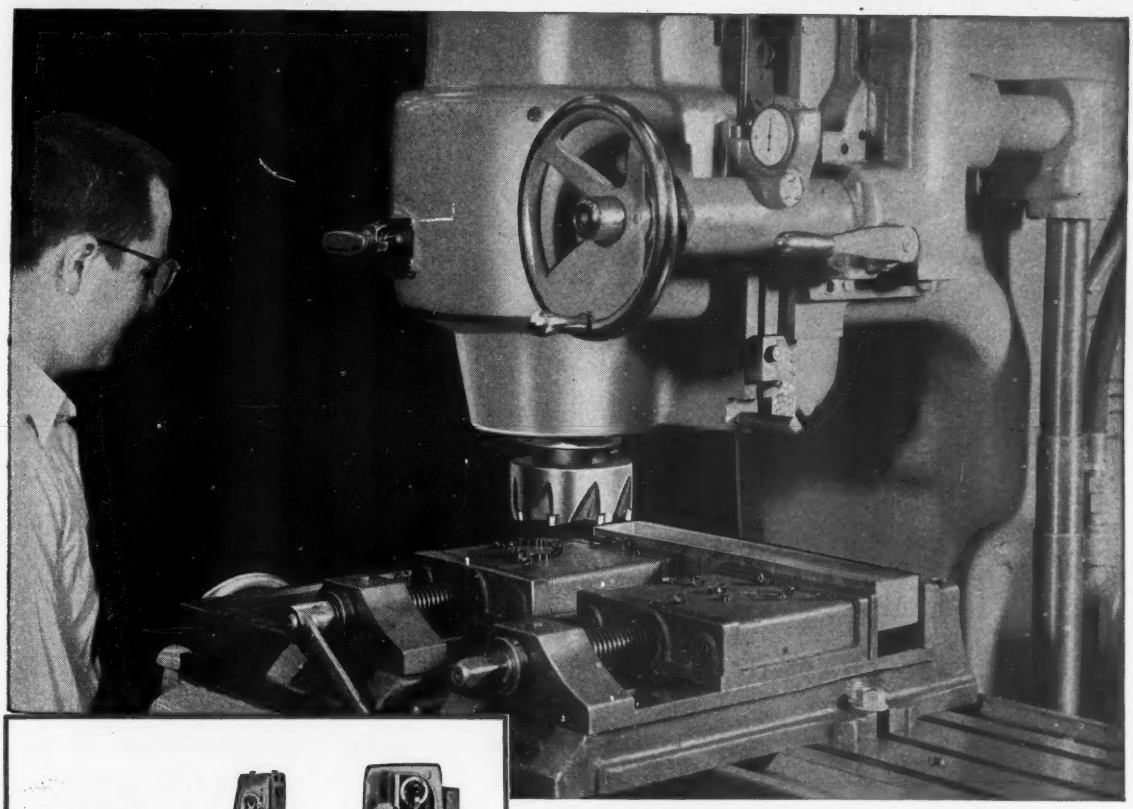
James S. McKellar, 82, former manager, **Globe Shipbuilding Co.**, Superior, Wis., and organizer of the Barnes Duluth Shipbuilding Co., died Aug. 27 in Rochester, N. Y.

Moritz O. Kopperl, 51, executive vice president, **Edgcomb Steel Corp.**, Hillside, N. J., and one of the founders of the company, died Aug. 31, after a two day's illness, at his summer home in Laconia, N. H.

J. W. Unroe, formerly general manager of **Wheeling Steel Corp.'s** Steubenville Works, Steubenville, O., died Sept. 3. Because of his health, Mr. Unroe was forced to retire from active duty in September, 1950.

FACTS TELL THE STORY...

NEW KEARNEY & TRECKER MILWAUKEE CK MILLING MACHINE CUTS PRODUCTION TIME 75%



C-K MILLING MACHINE FEATURES THAT HELP DO THIS JOB BETTER

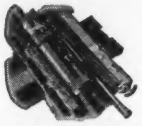
New CK column easily absorbed vibration from heavy cutting load.

Greater horsepower permitted maximum results from modern cutter.

24 different spindle speeds (13 to 1300 rpm) plus 32 different table feeds (3/8" to 90" ipm) meant operator selected proper combination to take full advantage of high horsepower and modern tools.

CK's 3-bearing spindle and flywheel assured fast metal removal, excellent finish.

CK's large (2" dia.) table feed screw gives greater bearing contact for smoother feed.



CK's positive, metered lubrication assures trouble-free operation.

The FACTS on this job are:

Operation: Face mill four sides
Workpiece: Ram for slotting attachment
Material: S.A.E. 4615 forging — 2¼" x 2¾" x 18½"
Machine: New 25hp No. 4 CK vertical
Cutter: 6" dia., 8 Tooth Carbide Face Mill with 7° negative primary rake angle.
Cutter Speed: 275 rpm **Depth of Cut:** ¼"
Table Feed: 25 ipm **Machining Time:** 3.8 minutes
Total Saving in actual machining time: 11.9 minutes or 75.8%

NOTE: Part machined is the operating ram used in a slotting attachment. It must be tough and accurate. It is milled to a semifinish state and finish ground to final accuracy.

It will pay you to see the new CK line of milling machines — check them against your own requirements. You'll notice how every feature is designed and job-proven to give you cost-cutting results — greater machine capacity, productivity and better finished products. So, for the full story, contact your nearest Kearney & Trecker representative or write: Kearney & Trecker Corp., 6784 W. National Avenue, Milwaukee 14, Wisconsin.

KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS

Broaching compressor wheel slots

Broaching intricately formed slots in aluminum compressor wheels at a speed of 70 feet per minute — with a return stroke of 120 feet per minute — is a practical reality at Detroit Broach. This great broaching advancement is the result of imagination and sound broach-engineering experience . . . a combination forged by years of creative engineering and manufacturing of broaches and broaching tools exclusively.

Whether your application involves a new concept in broaching or the simplest type of conventional broaching, these same factors will benefit you in terms of broaching economy and dependable tooling when you call on Detroit Broach.

WORLD'S LARGEST MANUFACTURER OF BROACHES AND BROACHING TOOLS EXCLUSIVELY

DETROIT BROACH COMPANY

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Production AND Engineering

NEWS AT A GLANCE

FLEXIBILITY PAYS OFF—When Nash tripled its production to its present rate of 1000 cars per day, its foundry hummed without any strain. The reason: The original equipment was flexible enough to do the job. Molds for approximately 42,000 castings per day are produced on six mechanized molding units. Each of the units was designed to do a specific job, but three of them—Nos. 1, 2 and 4—are similar enough so that the jobs on them can be interchanged when production demands it. This flexibility proved all-important on several occasions and offers convincing evidence that flexibility is essential even in a high-production auto foundry.

MORE NICKEL SAVINGS— New jet engine parts facility now being built by Solar Aircraft Co. in San Diego, and expected to be in operation this fall, will save scarce strategic nickel practically on a production basis. The setup is for applying ceramic coatings to J47 jet engine parts through a method that allows substitution of leaner alloys for those rich in strategic elements—with equal or longer service for the coated parts. The jet engine parts, the company says, can be made of AISI type 321 stainless containing only 8 per cent nickel, instead of an alloy with a 76 per cent nickel content. Nickel savings are expected to run into thousands of pounds per month.

DOUBLE PAY-OFF— Decision to use commercial steel specifications where they parallel Navy specifications, under a program initiated by the Office of Naval Material, is expected to pay off two ways. It will improve availability of steel for Navy use, and save time and effort on part of steel producers. ONM is now cross referencing Navy and commercial specifications of parallel chemical and physical properties, and has asked all bureaus to screen specs covering ferrous metals to determine those in which commercial specs are not included. Its request calls for inclusion of nonproprietary commercial designations wherever possible.

IT GROWS FUEL WHILE IT BURNS—That experimental breeding reactor that the Atomic Energy Commission talks about every so often—the one that late last year turned out electrical energy for the first time—may one day go way beyond merely revolutionizing power plant practice. If you can visualize a conventional power plant that burns coal to ashes, but also creates fuel in the process, you get the picture of what is happening. In AEC circles, the process of producing more fuel than burned is known as breeding. Now breeding technology is so advanced that it is actually possible to produce more fuel than is burned, and at the same time obtain useful energy. At present, while the reactor is generating electrical power, attempts are being made to determine how much fuel can be obtained in excess of that burned. Incidentally, the active core of the reactor is as small as a football, but its innards are complicated.

FOUND: A LOWER COST DIE—Chrysler did it. Engineers there developed a technique of using plastic dies that promises to pay off in a big way. Already a 1000-ton press at the corporation's Nine Mile press plant is stamping out some new die history in drawing truck panels. The die is not entirely plastic, but a combination of metal and plastic that can be built for 50 per cent less cost of all-metal dies. Test dies currently in use produced more than 10,000 steel cowl side panels thus far, and were made in less than three weeks. Normally 14 to 16 weeks are allowed for regular dies. p. 92

AN ASSIST FOR AUTOMAKERS—Those in the automotive field concerned with bright work may be able to stop pulling their hair over the trim situation. They now have at hand a material that holds great promise for automotive trim. It's an aluminum alloy that takes an unusually brilliant finish developed by Alcoa. Good working knowledge of the alloy has already been gained through extensive applications in the field of giftware and refrigerator trim. Treated with a special coating, it approaches high purity aluminum in transparency, luster and sheen of its finish, while providing substantially higher mechanical properties.

MORE EXTRUSION CAPACITY—Look for more extrusion capacity in the not too far distant future—of the type using glass lubrication. Hydropress Inc., New York, says another 2500-ton installation, similar to that of Babcock & Wilcox, will go into operation shortly. Three other machines also are being built, two smaller ones of 1000 and 1650-ton capacity, and one giant for the U. S. Air Force. The latter is of 12,000-tons capacity.

METALWORKINGS—High property metals successfully bridge the gap between ordinary engineering materials (p. 94). But they do more than fill in. They improve product performance, even simply fabrication . . . Kaiser-Frazer is establishing quite a reputation for production savvy in defense work. Its setup of producing automotive and aircraft engines in one plant (p. 97) represents a real achievement . . . Grooving rod mill rolls now is a faster operation (p. 106). Better than 50 per cent of the machining time is clipped off by the use of precision gang tools on a standard lathe . . . Steel Founders' Society of America is using a new visual approach to carry the story of steel castings to college level students (p. 112) . . . Formula for figuring in the cost control of human relations used by one plant (p. 131) shoots efficiency to a new high.

Metalworking Outlook—p. 55 *Market Outlook—p. 173*

Automotive Forward Step

Plastic Dies Dra

A 1000-TON press at Chrysler Corp.'s Nine Mile press plant in Detroit is stamping out a new chapter in automotive die technology. Engineers of Dodge Truck Division have picked up a technique, using plastic dies, which has been standard aircraft parts production procedure for over three years and applied it to a truck draw die operation where there is an opportunity for production on a large scale.

With more than 10,000 steel cowl side panels already produced, Chrysler announces that the test so far is a success. H. L. Weckler, general manager and vice president, says that in addition to an indicated saving in initial die cost, the plastic dies promise an even more important economy—time—for certain types of production operations.

The test dies at the Nine Mile Plant, for example, were made in less than three weeks compared to 14-16 weeks normally required for comparable steel dies. No machining was required after the dies were formed, Mr. Weckler concluded.

This is the project which was first mentioned in STEEL, June 30, p. 61. Its original purpose, according to members of Dodge truck engineering department, was to develop a lower-priced draw die for limited production items.

Production Facts—Their conclusion, on the basis of the continuing test: Combination metal and plastic dies can be purchased or built for 50 per cent or less of the cost of all-metal dies. Life of the die, as measured by number of pieces which can be produced, has not yet been determined. Some yardstick will be provided in the run of about 50,000 parts. And new plastic dies for the entire cowl assembly are being completed for an ultimate capacity trial run.

Material used in the dies is a thermosetting liquid phenolic casting resin, called Tool Plastic by its maker, Rezolin Inc., Los Angeles. Among its properties is dimensional stability so that exact size patterns, instead of oversize to allow for shrinkage, are used. The plastic is mixed cold, poured without pressure and cured at 160° F for 12 to 24 hours.

One half the plastic die was formed by pouring cold liquid plastic into a plaster mold of the truck cowl side panel. After being coated with wax to simulate the thickness of the finished steel piece, this same mold was used to cast the second half of the die.

Heat Generator — Because the plastic material generates its own heat, hardening of the die was accomplished through its own chemical reaction. Curing of the die required less than 24 hours' exposure to the heat from infra-red lamps.

The first Dodge plastic die was made by using the old alloy steel die as the pattern. The punch and binder ring of the metal die were set up in correct relationship and a female plaster cast was taken off as the mold for the plastic punch die. After the punch had been cast and cured, the binder ring was made and fitted with the punch in similar manner to that used in a metal die.

On the Nose—Thickness of the steel to be stamped, in this case 0.040-inch, was duplicated by applying patternmakers' wax to the punch and binder ring, and the female die was obtained by casting directly against the male. Perfect mating was thereby insured and die barbering eliminated.

Because of the high impact resistance encountered in stamping steel, it was necessary that the plastic dies be cast in steel plate boxing. Base members are 1½-inch plate; the walls are ⅝-inch plate reinforced with gussets of the same thickness. After normalizing and machining, these boxes were given a protective paint coating to withstand acid action of the accelerator added to the Tool Plastic. The material was then poured through holes in the base plate.

Problem Solved — Acceptable

Side cowl panels of 0.040-inch steel for Dodge trucks are the first successful production parts made by the automotive industry on plastic dies

More than 10,000 parts already produced indicate the method has bright future in auto industry. Time savings in making dies, lighter weight, lower cost are advantages

Removed from the 1000-ton press for inspection are the components of the plastic die. In the foreground is the punch, in the middle is the lower half of the die and being dropped to the floor is the upper portion

ruck Panels

By H. C. TUTTLE
Detroit Editor

Examining the plastic punch die for any signs of wear are J. A. Phaneuf, Dodge Truck Division's master mechanic (right) and A. E. Garrels of the truck engineering department

stampings were being turned out three weeks after work on the plastic dies started, but trouble began soon after the run got under way when the wear plates on the punch commenced cutting plastic off one side of the ring. It was discovered by Chrysler and Rezolin men that the press was out of adjustment and that the old metal die from which the plastic die was made had a narrower than usual wall thickness between the edge of the draw bead and the die cavity. A minimum of 1¼-inch wall thickness is needed for the plastic.

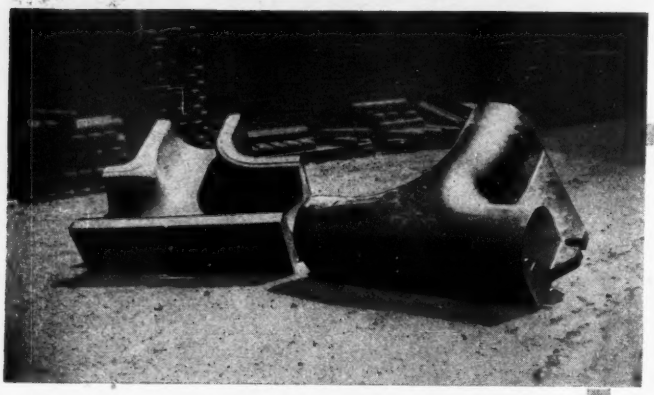
Additionally it was determined that wear plates should be on both punch and ring, extending about ¼-inch beyond the surface of the plastic, instead of 1/16-inch as on the original. The plastic die was changed by putting cast iron draw beads on the die and binder ring, and bronze wear plates on the punch and steel wear plates on the blank holder. After a brief spotting-in period the doctored dies were put back to work.

Easy Repairs—Another lesson learned in the Dodge test was the ease with which die repairs could be made. Early in the run an air pocket in the plastic of the punch, just under one of the wear plates, caused a piece of plastic to break off. A patch was made with the regular resin and an accelerator. Normally requiring two hours to cure, this patch was heated by an infra-red lamp and operation was resumed 70 minutes after the break, without removing the die from the press.

In the case of Chrysler, the weight of the plastic in the new die is less than 1500 pounds. This compares with 6000 pounds for the conventional steel die. This weight saving was one of the reasons for wholehearted adoption of the plastic material by the aircraft industry where large sections are commonplace.

Taking Chrysler's eye more than this factor, however, were reports of die cost savings by some members of the aircraft industry. At Lockheed, for example, 42 double-action dies for a fighter plane air duct were made in 90 days—saving about 6000 man-hours over the same type tooling in metal dies for a similar plane.

Another test conducted at Northrop, on seven typical aircraft tools, established an average time saving of 47.7 man-hours per tool, mostly by eliminating finishing operations, the tools as-cast being within tolerance. Over-all cost saving in this instance was reported to be more than 60 per cent and the time needed to make the tools about half of what metal dies would have required for the same job.



These dies, used in hot forming fittings from ⅜-inch steel plate require no machining. They stand up under heat and provide superior wear resistance

High property metals successfully bridge the gap between ordinary engineering materials. But they do more than fill in. They not only improve product performance but simplify fabrication

High-Duty Irons

FROM the engineers' and designers' standpoint, it is an established fact that higher property metals literally do bridge the gap between ordinary engineering materials.

It is all too true even these days, in spite of the many real advances which have been made, not only in foundry production practices, but in the spreading of knowledge about engineering materials and their design characteristics, that in much engineering thinking there is still a definite lack of acceptance of iron castings as having dependable properties of a high order.

Rolls Meet Test—Perhaps the outstanding advancement in recent years so far as the records reveal is the application of Meehanite rolls used in a plate bending machine. These rolls measure over 14 feet in length and have a diameter of 13 inches. In the plate bending machine they handle steel plates as thick as 1¼ inches and widths up to 48 inches. The extremely high stresses on the journals in an installation of this type are obvious. The rolls have to provide a high degree of toughness, strength and rigidity.

The company estimated that by using this material they saved about $6000, and at the same time they neutralized the time loss which would have been created by the forging shortage.

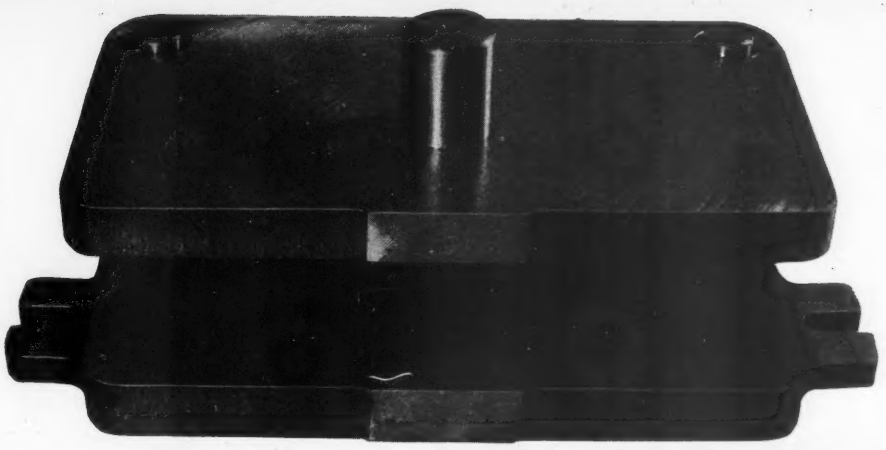
Since this application proved successful, the company that produced them has designed and built an entirely new and still larger plate bending machine for its shop. In this case it used Meehanite rolls not only for both top and bottom rollers but even built the entire machine of the material.

Die Problems Reduced—The use of the material in dies providing correct properties for forming and stamping operations in many instances permitted elimination of tool steel inserts. The material also enables dies to stand up under heat and provide superior wear resistance. A good example are the dies used to make hot pressed fittings from ⅜-inch steel plate. Metal surface is important since no machine finish is performed on the casting.

In industries performing varied stamping and forming operations, standard or commercial die sets are used extensively. They are important contributors to efficient, accurate press production. The sets provide manufacturers with a number of advantages most of which are dependent upon the combination of quality, provided by the manufacturer's skill, and the properties of the materials used for die set construction.

Proved in Die Sets—A typical commercial die set is one using Meehanite castings for the punch holder and die shoe. The importance of this rather simple appearing application is emphasized when it is remembered that a die set is never used in its "as manufactured" condition for much of both the punch holder and the die shoe are removed to accommodate inserts, dowel pins, screws, knockouts, etc.

In operation, the set must not only locate the punch and dies ac-



High-duty iron was used in fabrication of this die set. It provides properties to withstand repeated impact

nsReduce Costs

By C. E. HERINGTON
Meehanite Metal Corp.
New Rochelle, N. Y.

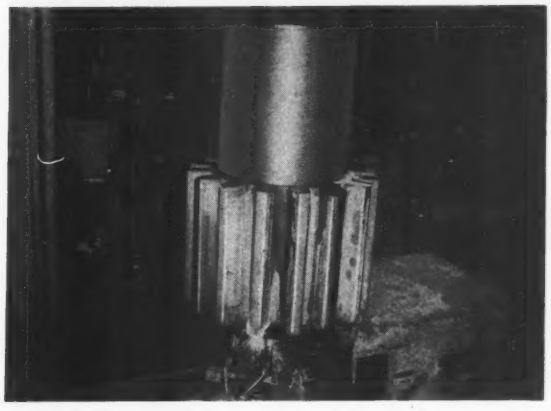
curately, but must back up these tools and stand repeated impact during operation. Hence a die set must be rigid, tough and possess high compressive and tensile strength properties. Meehanite castings meet all these requirements, although many standard die set manufacturers still feel that they must resort to steel plate.

The heat treatability of Meehanite irons also widens the field of applications and provides many opportunities for economies and production advantages. Used in a crusher hammer for crushing silicon carbide, the service record of the irons shows the same production life at 1/3 the cost of the former material.

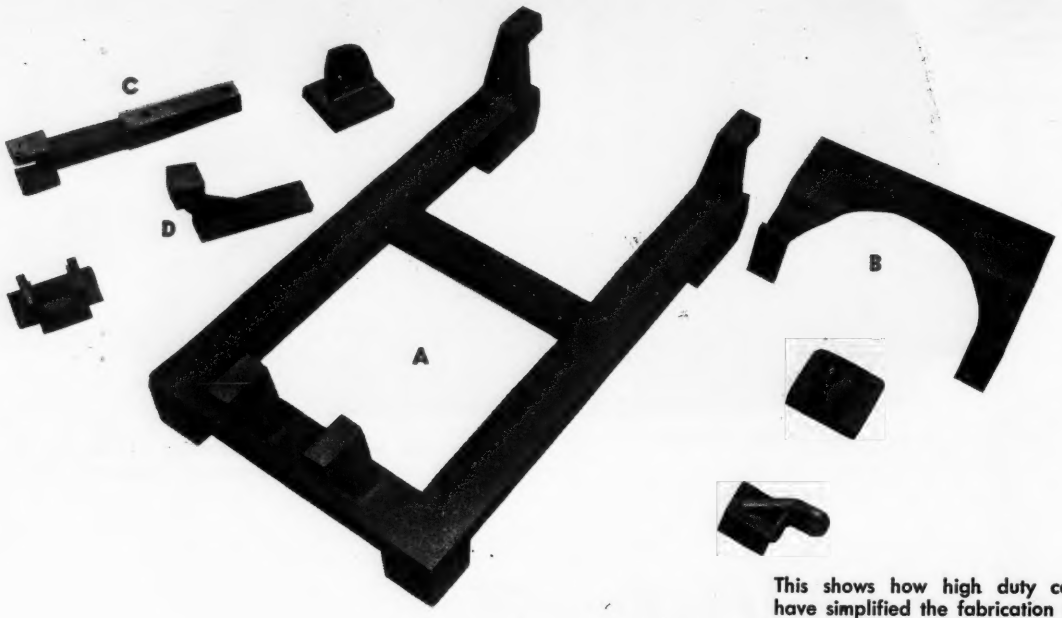
Fastening Unexploited — It has always seemed a bit surprising that even in the field of fastening devices there has been comparatively little use made of high duty irons. In the manufacture of a certain type of press used in the cotton industry Meehanite nuts were used as a means of saving steel with complete success. This particular nut has an outside diameter of 8 inches and weighs 48 pounds.

Sometimes designers schooled in the use of weldments come up with many combinations of parts and materials joined together by welding. Various jigs required by aircraft manufacturers for the fabrication of various plane parts provide a good example.

Jig Problem Eased—A few relatively simple Meehanite castings were incorporated in a redesign of such jigs, eliminating literally dozens of smaller pieces which had been welded into a single unit. For example, the casting (A), in one of the accompanying views, is the main fitting casting. This particular unit eliminated one 12-piece weldment and four 3-piece weldments when used in a fuselage joining pig assembly. The same



When specs of this cotton press driving pinion were changed to use Meehanite, teeth were cast closely to shape and little milling was required for finishing



This shows how high duty castings have simplified the fabrication of jigs for aircraft assembly, thereby eliminating the use of dozens of weldments

casting used in a nose jig assembly permitted the replacement of one 12-piece weldment and eight 3-piece weldments.

Casting (B) as used in the fuselage joining jig assembly is produced in right and left hand units and two of each of these eliminate two 3-piece weldments and one 4-piece bolted steel unit.

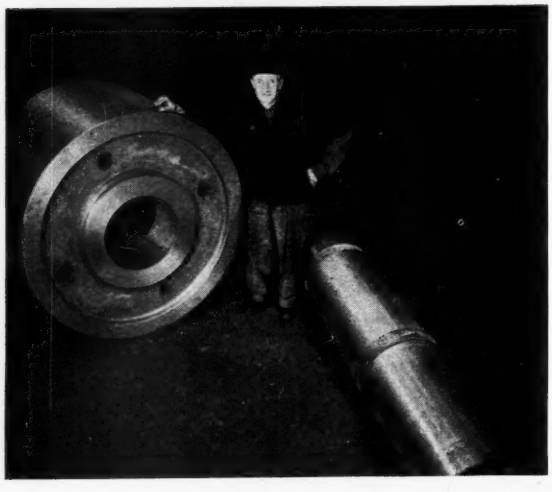
Similarly casting (C) known as the pick-up arm casting was able to replace a 2-piece bolted steel unit.

Casting (D) likewise replaced one steel block and a 3-piece steel weldment. Savings through this sort of improved design are obvious.

Easy on Steel—The manufacture of cement mill equipment provides a good example of how steel can and has been saved by the use of Meehanite trunnion rollers. The casting weighs nearly 10,000 pounds, and there are 109 rollers on a 300 foot cement kiln.

While malleable castings may not necessarily be considered as a critical material today, they have for some time been in short supply. In this field too there have been many specifications calling for excessive ductility, and elongation really never required by the application. An interesting example is a jack base which for many years had always been a malleable casting but is being produced with complete satisfaction in Meehanite metal.

From the standpoint of economy, Meehanite tool shanks and bodies cast to form are generally considerably cheaper, and tool life and actual cutting performance are improved. A shank of this material has a greater ability to absorb vibration. Studies reveal that the coefficient of expansion of the Meehanite castings is very close to that of a sintered carbide tip. Therefore, the chances of loosening the tip and the possibility of its loss are reduced.



Example of how steel is saved. This casting, weighing nearly 10,000 pounds, is a cement mill trunnion roller

Vision Conference Announced

Second annual conference on occupational vision will be held by Rutgers University at Atlantic City, Nov. 13 and 14. Conference will continue to promote conservation of vision, protection of eyes against injury, and the values of increased efficiency, health and welfare of industrial workers through occupational vision programs.

A Wright Cyclone radial engine being assembled at the Detroit plant

Output of hundreds of machine tools in Kaiser-Frazer's Detroit and Dowagiac, Mich., plants is co-ordinated to produce 7-cylinder radial engines in quantity

Aircraft Engine Components Machined in Complex Setups

HAVING WON for itself a reputation for resourcefulness and engineering prowess in the civilian automobile field, Kaiser-Frazer Corp. now is establishing a reputation for possessing an enviable amount of production savvy in defense work.

Its two most spectacular jobs are the building of C-119 Fairchild cargo planes and C-123 Chase assault planes at Willow Run. No less interesting, however, is its work on Wright Cyclone C-7 aircraft engines. These seven-cylinder radial engines in the "dash 1" version power North American's T-28 advanced training plane and the "dash 3" is used in the Sikorski H-10 helicopter.

Willow Run is a favorite example of the dual purpose plant. Automobiles and planes taking form virtually side-by-side make a sharper contrast than most other joint civilian-military operations. The combined production of automobile engines and aircraft engines in one plant, though not quite so dramatic, nevertheless represents another noteworthy Kaiser-Frazer achievement.

No New Plant Needed—Home of K-F's automotive and aircraft engine manufacturing is the Detroit Engine Division's plant on Jefferson Ave. in Detroit. This plant has been in K-F's hands since March 1947 when it was leased from Continental Motors Corp. It was purchased four years later. Used for aircraft engine manufacture during World War II, the plant bulges from the imposition of the large production contracts for Cyclone engines on top of the manufacturing schedule for Kaiser automobile engines.

Space that is devoted to the latter part of the plant's business has been squeezed down to 246,000 sq ft from its original 543,000 sq ft

Carrier reduction gear pinion shown in rough, semifinished, finished form requires 105 machining operations

AIRCRAFT ENGINES

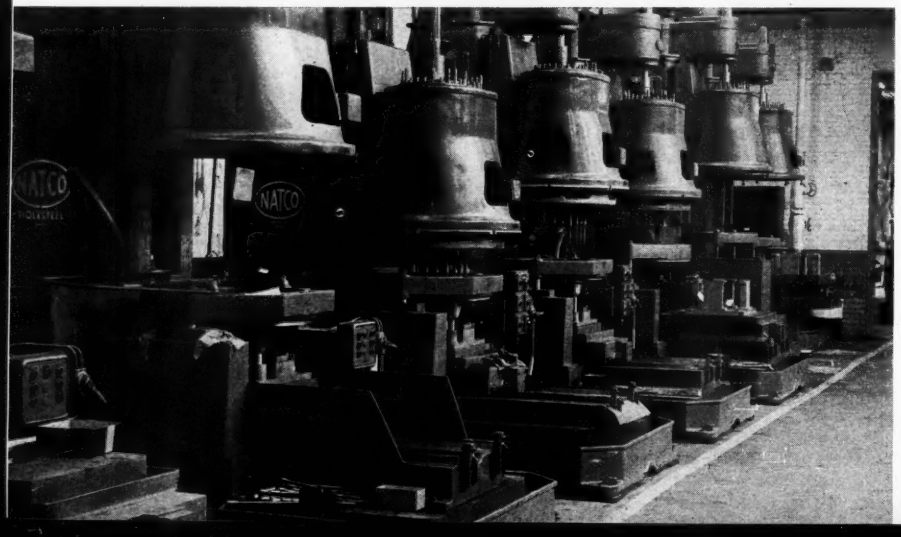
Electroplating department has 100 tanks. The operation employs 13 different kinds of plating processes and runs copper, bronze, cadmium, chromium, silver and lead-tin

without reducing auto engine capacity.

Equipped with 17 test cells but lacking in suitable instrumentation for the C-7s and with inadequate facilities for simulated flight testing of the engines and for experimental work on them or larger units if these should be called for, the plant is well along in a construction program. This adds an engineering building for the huge flight test cell and reconstructs and reinstruments other test cells.

The other plant owned by K-F and operated by the Detroit Engine Division to make parts for the C-7 is not dual purpose. At Dowagiac, Mich., and formerly housing Round Oak Stove Co., it has had the checkered career of being the birthplace of a famous line of pot-bellied cast iron stoves, of having its foundry used by K-F in the early postwar period to produce castings, and now of forgetting its foundry background to become solely a machining and partial assembly facility. Its 350,000 sq ft contains over 600 machine tools, many picked up from government stocks and some bought from used machinery dealers.

Large Plating Setup—Largest of the engine components — crankshaft, supercharger housings, cylinder heads and barrels, propeller shaft, and others—are machined at this plant. The necessity for plating many of these parts has resulted in the installation of one of the most diversified and completely equipped electroplating departments in the automotive industry. Containing 100 tanks, the operation employs 13 different plating processes and runs copper, bronze, cadmium, chromium, silver and



Battery of Natcos used to machine magnesium engine housings

All castings are given 100 per cent x-ray inspection as they arrive from the supplier. Casting that is shown here has a sand inclusion

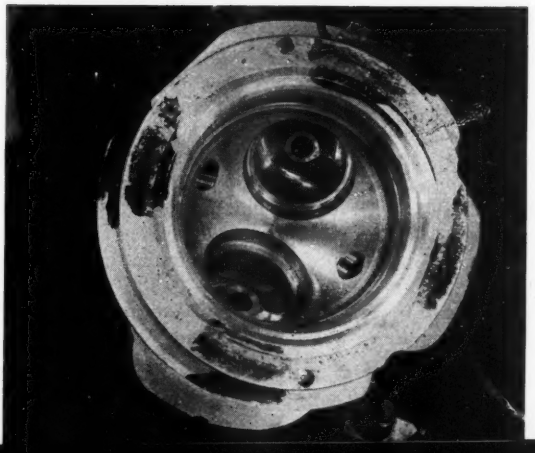
lead-tin. Other wet processes included anodizing, bonderizing, chrome pickling, dichromate dipping, casting impregnation, and painting.

With a substantial number of the cast engine housings made of magnesium, a separate machining section has been set aside for operations on this metal to minimize the fire hazard. Work on the supercharger front and rear housing and on the supercharger rear cover and crankcase front section is performed here.

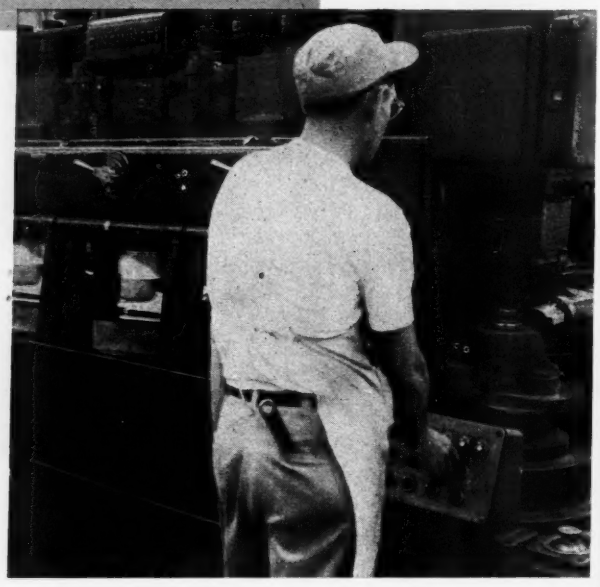
Sixty-Eight Stations—The most impressive machining line in the Dowagiac plant is that installed for the production of the cylinder heads. This line consists of 28 machines with 68 machining stations tied together with roller conveyors. Much of this line had been used in the Dodge-Chicago plant during World War II. After the head (an aluminum forging) emerges from this line of Greenlees, it goes to Snyder profile mills which rout the metal out of the intake and exhaust valve ports. The head then has cooling fins machined into it by a Cincinnati Hydro-Tel. Working on four heads simultaneously, this machine follows a master template which determines the depth and contour of the cuts.

The cylinder barrel (a steel forging) meanwhile is brought to inside and outside diameter on Bullards, honing after nitriding, and then put through a gang groove cutter. Into these 26 grooves aluminum fins, made in two half-circle parts, are then rolled on and locked.

Complex Operations—Some of the most exacting operations are performed on the counterweights which attach to the front and rear crankshafts. Four of these steel forgings are used in each engine. Their sides are milled and ground and lapped to within 0.0005-inch flatness with a surface finish of 32 microinches maximum. Machining this part, however, holds few of the thrills of making the carrier reduction gear pinion. This requires 105 operations and tolerance must be held to 0.001-inch not only

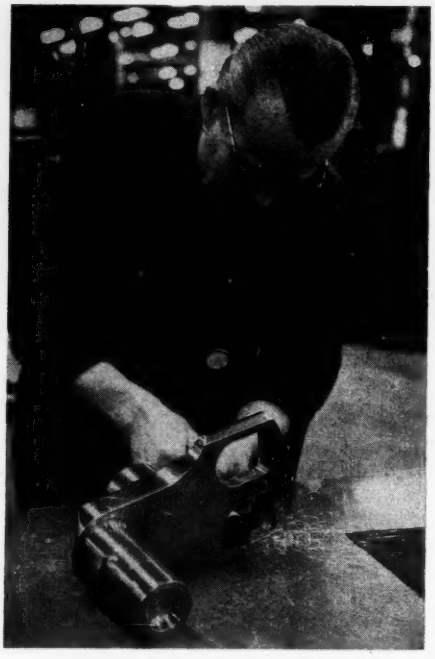


Intake and exhaust valve ports are routed out on Snyder profile mills



This Cincinnati Hydro-Tel machines cooling fins into cylinder heads

Crankshaft being hand polished



between every adjacent pin but also as a cumulative figure around the part's periphery.

Two vital phases of aircraft engine manufacture cannot be overlooked. Inspection at incoming and outgoing ends is of paramount importance. All castings, for example, are given 100 per cent x-ray inspection as they arrive from the suppliers. Castings with defects are caught before any machining time is expended. Forgings also receive 100 per cent inspection from the first heat and 10 per cent sample inspection from subsequent batches as long as quality stays perfect. The Air Force's abhorrence of sharp corners in rotating parts necessitates extensive hand polishing before the parts become acceptable.

Weight Comes Off—At the Detroit plant, remainder of the engine's K-F produced parts are machined, and the engine is assembled, tested, torn down and reassembled. Longest transfer machine line at that location is used for production of the front and rear halves of the crankcase. In this operation 70 per cent of the forging's original weight is removed.

Until both plants could be tooled up, K-F acted as an assembler, using Wright-furnished parts and in February became the first licensee of Wright to commence output in the current rearmament program. K-F has moved steadily toward self-sufficiency since that time and just recently completed the first engine using only parts made by it or by its own subcontractors.

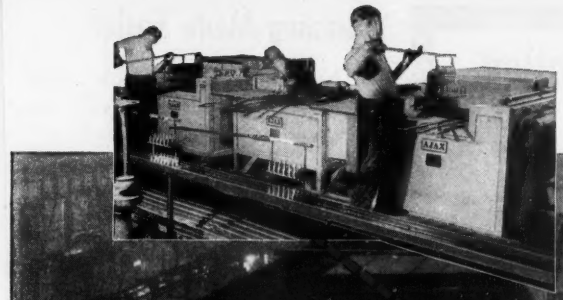
Clarke A. Silcott, general manager of the engine division, estimates that 70-80 per cent of the man-hours which go into the finished engine are K-F supplied; K-F-made parts, however, do not account for nearly that high a percentage of the engine's total cost because certain of the important purchased components, such as the carburetor, are of extremely high value.

Indicative of the totally different problems and operations required for aircraft and automobile engine production is the fact that cost of the former is more than sixty times greater per pound of finished weight than the automotive engine.

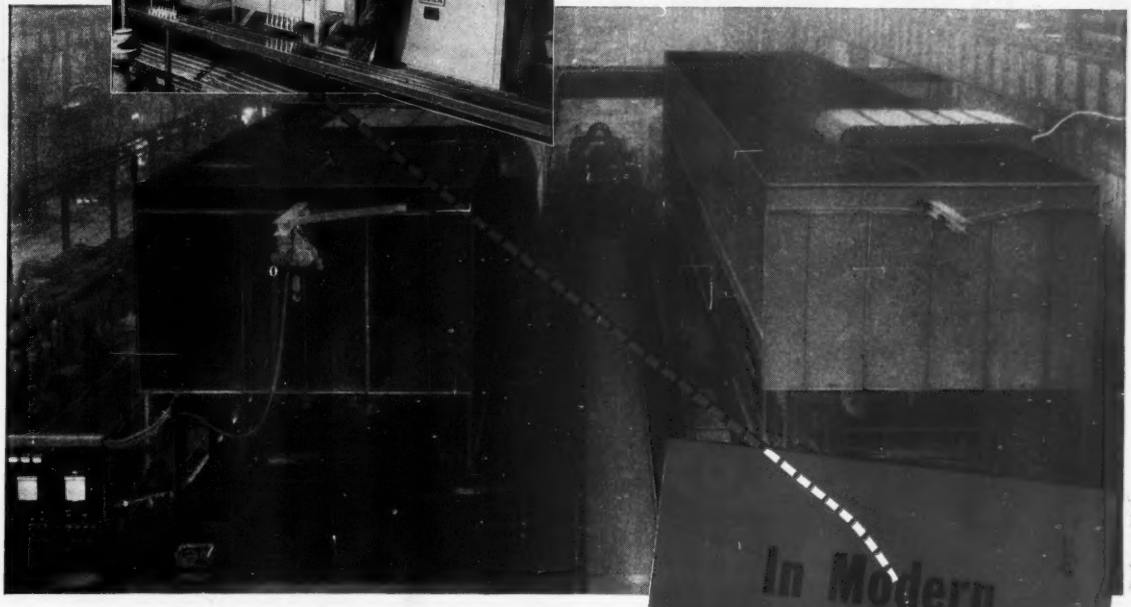
Furnace Tilting Made Surer

A potential trouble spot in the tilting arrangement for many direct-arc furnaces is eliminated by application of a ball bearing screw and nut assembly, designed for a life of about 400 million revolutions. Assemblies made for this job have been subject to extreme wear, forcing frequent replacement of parts.

The ball bearing assembly, a product of Whiting Corp. Harvey, Ill., should prevent the stripped threads that sometimes release the furnace, with its charge, to rock uncontrollably. A life of 400 million revolutions means about 20 years of operation.



From the batch type installation at the left martempering base detonator fuses, to the huge mechanized furnaces austempering automobile bumpers illustrated below, Ajax Electric Salt Bath Furnaces are replacing old-style quench and temper methods for a wide variety of steel products.



From ring gears to plow points . . .

From bearing races to cast iron cylinder sleeves . . .

From uniformly shaped metal parts to odd and irregular sizes . . .

Scores of installations have proved the tremendous possibilities for economy, greater speed and efficiency in martempering and austempering, because all water and oil quenches are eliminated.

Distortion is so negligible that parts can be machine finished *before* hardening. Final grinding is eliminated or materially reduced. Scale, decarb and quench cracks are eliminated. Toughness and ductility are increased. The work is done materially faster—in less floor space—with lower labor costs. Let the Ajax Metallurgical Service Laboratory prove these claims on a specimen batch of your actual parts, under actual working conditions.

Write for Ajax Bulletin 120

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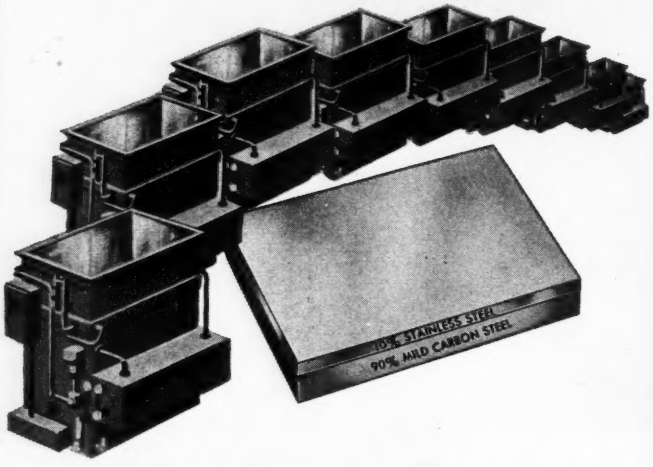
AJAX ELECTRIC SALT BATH FURNACES

How to Make Stainless Protection Go NINE TIMES FURTHER... with PERMACLAD

STAINLESS CLAD STEEL



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Brazing Made Easier

New brazing materials eliminate drawbacks of conventional silver brazing practices

NEW silver brazing materials that eliminate major drawbacks of conventional silver brazing practices are now in production at the plant of the American Silver Co., Flushing, N. Y.

Called Braze-Clad metals, they provide flawless blind joints and joints of long cross-section without reliance on the skill of the operator.

Joints 100% Effective—The metals eliminate voids and oxide islands, and produce joints that are effective over 100 per cent of the bonding area. They cut fluxing and cleaning time, and simplify assembly setups by making conventional preplacements unnecessary.

Consisting of various base metals (ferrous and nonferrous) clad with a predetermined thickness of silver brazing alloy on one or both sides, the brazing alloy (which is available in a wide selection of melting points) is pre-diffused into the surface of the base metal by the application of heat and pressure.

Brazing Alloy Anchored—Chief among drawbacks of silver brazing when alloys in standard form are employed are: Balling-up in the first stages of heating; and uneven, unpredictable spread after that. This is eliminated with new metals, because the base metal anchors the silver brazing alloy in place throughout the heating cycle. The alloy flows, but never runs: It stays put, and retains its uniform thickness.

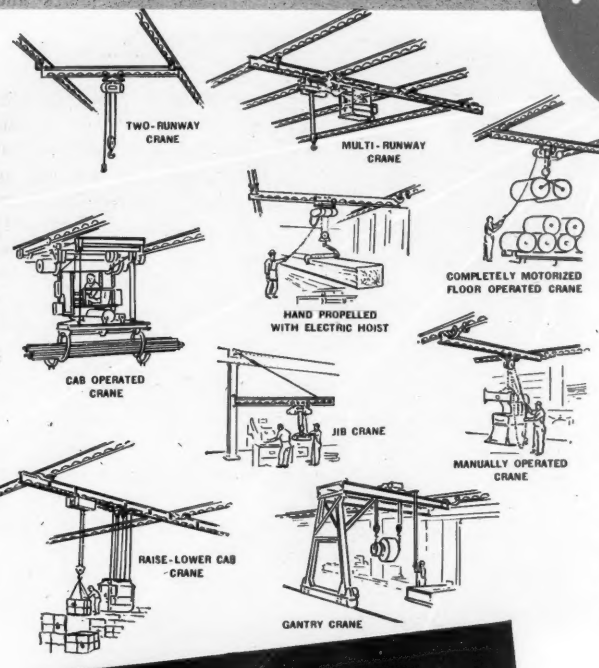
This unique anchoring property assures a uniformly controlled, sound joint—with no voids, gas pockets, oxide islands, or flux inclusions. The alloy is evenly distributed throughout the joint area, and has intimate contact at every point with the metals to be joined.

Since it's no longer necessary to depend on capillary creep, the most intricate blind joints, and joints of record length can be easily accomplished with new metals. Elimination of the need of sluggish

CLEVELAND TRAMRAIL

THE OVERHEAD TRACK TO
Lower Production Costs

Which of these Cranes ARE YOU PAYING FOR?

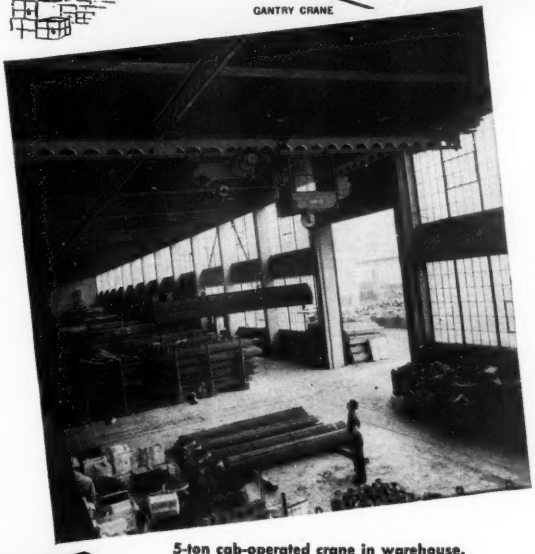


UNLESS your plant is unusually well equipped with materials handling equipment, you may in effect be making sizeable payments on one or more cranes every month through inefficient handling losses.

A large part of the time required to produce an item is consumed in handling materials entering into it. Surveys indicate that this time amounts from 25% to 50% of the total production time. Suppose additional cranes could reduce this handling time by 10% or 20% in your plant, how much would they be worth to you?

Look around your plant. Study lifts that require two or more men. Can this work be done easier and faster with a crane? Can safety be improved? Check costly time lost by skilled mechanics waiting for crane service. Analyze your warehouse and storage areas—can aisleways be used for storage? Can materials be piled higher?

Don't pay for Cranes without getting them!



5-ton cab-operated crane in warehouse.

Manually-operated cranes handling rolls of aluminum foil.

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THE CLEVELAND CRANE & ENGINEERING CO
7896 EAST 284th ST. WICKLIFFE, OHIO

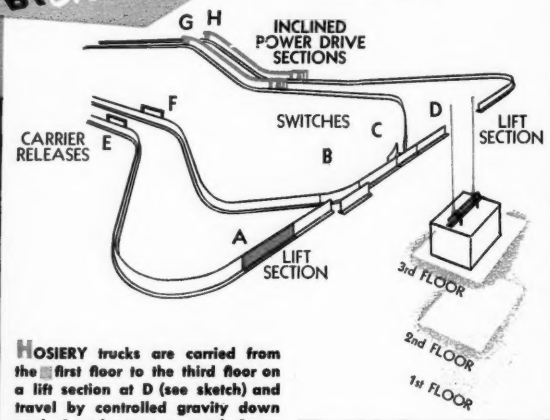
CLEVELAND TRAMRAIL

THE OVERHEAD TRACK TO
Lower Production Costs

AUTOMATIC SYSTEM HAS 200 CARRIERS . . TRAVELING BY GRAVITY

View of four tracks taken from a point near lift section J. Track 4 is at left. The two outside tracks handle carriers with loaded trucks and the two inside tracks handle carriers with empty trucks.

FLOW DIAGRAM illustrates gravity travel and power drives of system.



A Cleveland Tramrail system at Hanes Hosiery Mills Company, Winston-Salem, North Carolina, producers of ladies' nylon and rayon hosiery, is unique because while it is entirely automatic in operation, its 200 carriers run by gravity. The carriers convey and store empty hosiery trucks, handling two at a time. Following are some of the advantages provided by the system:

1. Time spent pushing and handling hosiery trucks has been drastically reduced.

2. Large storage warehouse which would be required for storing the trucks is saved because ceiling space is now used for this purpose.

3. If it were not for the Tramrail System, a new building addition would probably have been necessary.

4. An elevator on which the trucks formerly were taken from the first to third floor has been relieved of work that formerly taxed its capacity.

5. The cost of an additional elevator which would have been necessary to take care of additional trucks required because of greatly increased output, was saved.

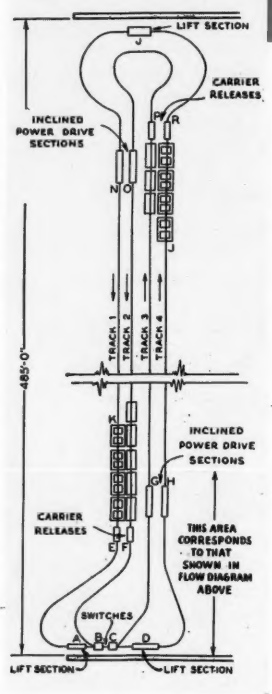
6. Costly maintenance formerly required because of hosiery truck casters wearing floors has been largely eliminated.

7. The system introduced an efficient means of handling the trucks, expedited their delivery, and greatly cut the costs of this work.

HOSIERY trucks are carried from the first floor to the third floor on a lift section at D (see sketch) and travel by controlled gravity down track 4 and return on track 1, on which they are stored until required. Trucks in storage are released at lift section A, but also may be released at J by stopping carriers passing through.

After the trucks in a carrier have been removed at A, the carrier travels through switches B and C, down track 3 and returns on track 2, where it is stored until needed on the first floor. As soon as a loaded carrier is dispatched from the first floor and leaves lift section D on the third floor, another carrier comes down and takes its place, ready for more empty hosiery trucks.

Only seven motors are required for the entire system. These operate the three lift sections and the four inclined power drives which convey the carriers to the high ends of tracks 1, 2, 3 and 4, all of which have a slight grade. Only at three points do men have anything to do with the Tramrail system: At the loading point on the first floor and the two unloading points A and J, on the third floor, and their only work is to push empty hosiery trucks on or off of the carriers, which is an incidental task done along with their regular work.



OVERALL LAYOUT OF SYSTEM

The 200 carriers travel over one-third mile of Tramrail track, with only seven motors.

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capillary-flow to distribute the brazing alloy through the joint, shortens the heating cycle as well.

Less Work—The anchoring action also does away with extensive after-brazing operations to remove unwanted overflow, burrs, or fillets. In addition, joint preparation operations, such as fluxing and cleaning, are cut in half, since conventional preplacements, rings, washers, special shapes, are no longer needed.

The new development is finding wide industrial applications—from aircraft engine bearings and electrical contacts to chemical equipment. Typical applications include: Joints of large area, pressure-tight joints in high pressure pipe lines, and blind joints. They're also used for joining powder metal parts, for honeycomb structures and for joints of very high strength.

Leaflets for Small Plants

Shop safety and the machining of aluminum are the subjects of two new Small Defense Plants Administration leaflets now available to aid small businessmen.

Leaflets are No. 7 in the dual series of management aids and are available free on request from SDPA field offices.

Safety leaflet explains the function and organization of shop safety committees and includes a list of suggestions to help make the work of the safety committee effective.

Technical aid leaflet gives detailed information about working with aluminum in the shop.

Fork Trucks Are Diesel Powered

Towmotor Corp., Cleveland, announces that four of their fork lift truck models are now available with either gasoline or diesel engine. Models are the LT-62, LT-60, No. 460 and 480-P.

Tests of the diesel engine selected for these applications proved it capable of developing unusual power for its size and weight. Operating economy was also found to be exceptional even under hardest prolonged service. In addition, the engine's highly simplified design assures minimum operating and servicing problems.

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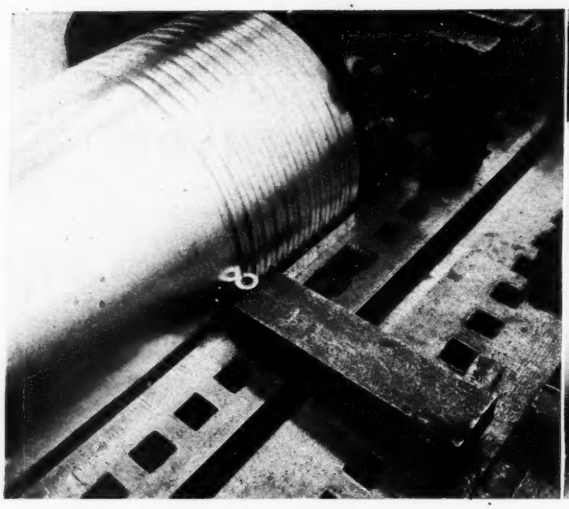
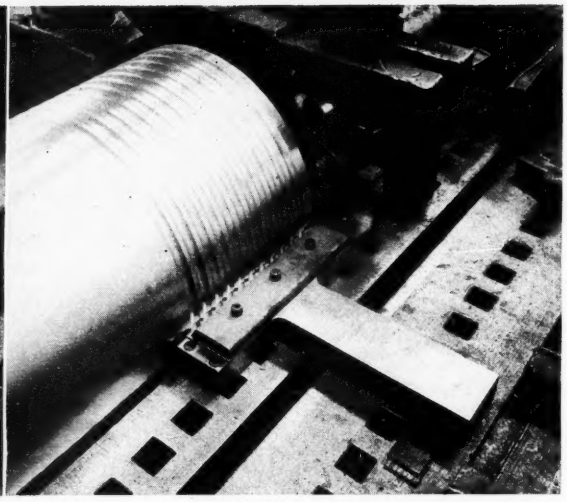
JOHNSON JB BEARINGS
Sleeve-Type



The old way—a single plug was employed to machine only one groove at each setting. The operation also involved topping or matching rolls while they were in the lathe



The new way—a solid blade tungsten carbide gang tool makes an oval cut on a standard piano-type lathe. Surface cutting rate is faster, groove alignment accurate

Precision Gang Tools Speed Roll Grooving

Less downtime, faster cutting rate save as much as 9 hours in grooving steel rolls. Job is done by tungsten carbide tools on standard piano-type lathe

ROD MILL roll grooving now is a faster operation. Besides being faster, it provides high surface finish and maintains extreme groove alignment accuracy—tool cutting edges are held to a tolerance of plus or minus 0.0005-inch.

Key to the operation, which is saving better than 50 per cent machining time for a well-known producer of iron and steel rolls, is the use of cemented tungsten carbide precision gang tools on a standard lathe.

Under the old method of high speed tooling, average machining time for a roll 12 inches diameter by 28 inches long of 65 Scleroscope, having 30 to 32 passes was 15 hours.

With carbide tooling the same type roll is now completely machined in approximately 6 hours.

By JOHN L. SULLIVAN
Engineer
Kennametal Inc.
Latrobe, Pa.

Time saved is due to the use of an increased surface foot rate of 30 feet per minute, plus less down time for regrinding tools. The gang tools, supplied by Kennametal, also eliminate the need for topping or matching of rolls while in the lathe, and the use of a master overall template. Now, all that is required are end gage templates for locating the roll's first pass and templates for gaging the pass depth.

No Special Lathes—Here is how it is done: The rolls are set up in conventional piano-type lathes, and by use of standard hand feed practices, 11 grooves are fully machined in one setting in the roll body. Next, the tool is moved to a new position and lined up to permit its one extreme end cutting edge to seat into the roll's last machined groove. This in turn controls and maintains equal spacing of the grooves.

In this particular type of mechanically held Kennametal tool, a negative back-rake angle of 5 degrees is machined into the shank. This provides ample clearance for the carbide cutting edges and a free machining condition.

For grooves in rolls requiring a round pass, a gang plug tool holder is required. Here the tool is so constructed that zero rake angles are used. In cases where a roll requires passes of irregular depths, the necessary tools may easily be

"We cut fuel costs in half!"

CONTROL DATA		
LINING	**MAX. FUEL CONSUMPTION**	**CONTROL**
Ordinary Firebrick	**1,000,000 BTU/HR**	**100 to 150F Overshoot of Critical Pouring Temp.**
B&W Insulating Firebrick	**500,000 BTU/HR**	**No Overshoot of Critical Pouring Temp.**

THE CHART ABOVE shows how B&W Insulating Firebrick slashed fuel bills by 50% and provided close temperature control when it was used in place of ordinary firebrick in a crucible type furnace melting magnesium. Similar savings were also made on identical units melting aluminum. • The reason for this superior performance is that lightweight B&W Insulating Firebrick store and conduct less heat, thus provide faster heating up time and lower fuel consumption. These brick also respond rapidly to changes in heat input, assuring excellent temperature control.

The defense plant expansion program has created unprecedented demands for B&W Insulating Firebrick. It is, therefore, necessary to anticipate your requirements as far in advance as possible.

KAOCAST FLOOR TAKES PUNISHMENT

In this same furnace, a floor of B&W Kaocast, the 3000 degree refractory castable, withstood the spillage of crucibles . . . eliminated the need to renew the floor every time a crucible was replaced.

BABCOCK & WILCOX

THE BABCOCK & WILCOX CO.
REFRACTORIES DIVISION
GENERAL OFFICES: 161 EAST 42nd ST., NEW YORK 17, N.Y.
WORKS: AUGUSTA, GA.

R-384

B&W REFRACTORIES PRODUCTS—B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick • B&W Insulating Firebrick B&W Refractory Castables, Plastics and Mortars • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment... Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

designed to permit fast and efficient turning.

Shim Keeps Angle — Top, or cutting edge, of the tool must coincide with the machine's center line. When using the gang plug tool it is necessary that a small shim ⅛ to 3/16-inch high be placed under the shank's back end to permit a minimum front clearance angle for the tool.

In machining rod mill rolls with its previous method, the company's down time was relatively high due to rapid dulling of the tool. To date it has fully machined eighteen 12-inch diameter 31-pass rolls with carbide gang tools.

Actually each insert cuts a total of 54 grooves before any indexing is required. When the cutting edge of the plug-type gang tools becomes dull, plugs are easily and rapidly indexed, establishing a new cutting edge. When the plug's entire diameter is dulled, it can then be turned end for end and an entire new circumference used before regrinding of the tool is necessary.

Plugs Are Interchangeable—Required plugs to make up a gang tool are interchangeable in the holder's various hole positions as they are held to a diameter tolerance of plus or minus 0.00025-inch. Blade-type tools are constructed so that when the used cutting edge becomes dull, the blade can then be turned over, providing a new tool —assuming it was originally designed to machine a roll with identical grooves.

Grinding of the blade, or solid form tool, is performed on a Wickman form grinder using a 100-grit diamond wheel. It is important that stock removal of carbide be performed with caution as a fine finish must be maintained on the tool. If an extra fine finish is required in the roll grooves, a wood lapping wheel with a fine diamond lapping compound are used.

Blade Regrinding Easy—As for blade regrinding, it can be done in one of two ways—either by surface grinding the blade's top (this way is preferable as most plants are equipped with standard surface grinders), or by having the form completely reground on a form grinder.

Plug tools present little or no problem in grinding as the plugs are originally ground in a centerless grinder for diameter size and a standard surface grinder for length maintaining a length tolerance of 0.001-inch. To regrind a plug-type tool it is only necessary that the plug's end be ground flat with a diamond wheel.

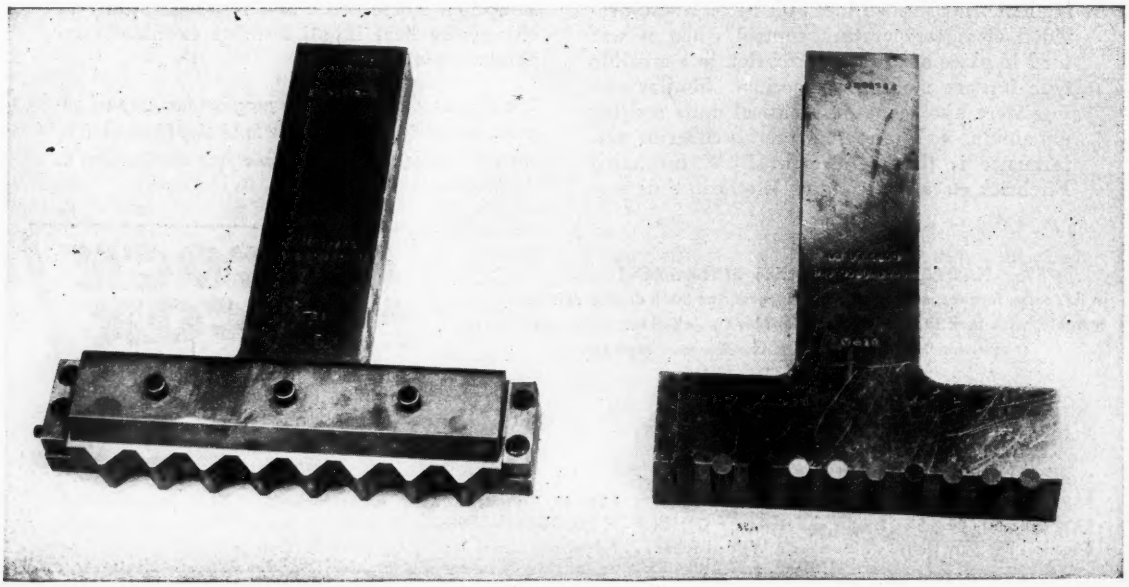
The Savings — After recently completing a large complement of rolls consisting of various size passes, the roll manufacturer reported the following time savings:

Average turning time per roll for machining over one hundred 12-inch diameter, 26-inch body rolls, was 6 hours and only 4 hours per roll on over one hundred rolls 10 inches diameter having 20-inch bodies.

This is a very pronounced saving in man-hours as past practices required some 12 to 15 hours for machining identical rolls. This saving alone is of great importance to the average steel mill roll shop which services rolling mills operating around the clock.

Today's mill speeds definitely require increased roll shop production on their existing turning equipment. Time actually saved in machining the 200 various size rod mill rolls represented savings of approximately $10,000 — with tools still remaining in good, usable condition.

Front views of cemented tungsten carbide plug type and single blade type tools that are used for machining round and square roll passes. Plug inserts here are positioned in precision jig-bored holes and rest on bottom plate made fast to the tool shank by a series of screws



WATCH THIS ANGLE

stop losses

(THE EQUIVALENT OF)

3376 blanks this size

A sheet of exactly .022" strip steel the size of this page (8¼" x 11¼") weighs approximately 9½ ounces. The same size sheet of .024" (.022", .002" oversize) with the triangle punched out would weigh the same.

in every ton if the .022" strip steel you order actually measures .002" oversize

footage loss increases as thickness increases; decreases as gauge decreases.

the precision gauge tolerance of CMP THINSTEEL protects you against such costly losses, insures maximum practical yield per ton

the Cold Metal Products co.

YOUNGSTOWN 1, OHIO

New York • Chicago • Indianapolis • Detroit • St. Louis • Los Angeles • Cleveland

See next page for list of THINSTEEL products

these are the ANGLES you'll like

CMP

THINSTEEL

TRADE MARK

LOW CARBON STEEL

Low Carbon Steel—.25% carbon or under. Full-hard, half-hard, quarter-hard or skin-pass temper or dead soft annealed; No. 2 regular bright and No. 3 mirror finish for plating. Thicknesses: .001" and heavier. Widths: 3/16" and wider to 24".

HIGH CARBON STEEL
Annealed or Hardened and Tempered Spring Steel

High Carbon over .25% to 1.35% carbon. Hard rolled or intermediate tempers to specifications—or dead-soft annealed. No. 2 regular bright and No. 3 mirror finish. Thicknesses: .001" to .093". Widths: 3/16" and wider to 24". Hardened and tempered—Bright, straw or blue colored, scaleless or polished finish. Various carbon and alloy analyses.

STAINLESS STEEL

Stainless —all popular types in standard tempers and finishes plus Bright-Annealed Chrome Nickel types (300 Series) dead soft for easy fabrication, a glistening mirror finish that requires little or no polishing. High tensile grades a specialty. Thicknesses: .001" and heavier. Widths: 3/16" and wider.

ELECTRO ZINC COATED

Electro-Zinc Coated with a tough, ductile, tight adhering zinc coating that withstands the toughest fabricating operations and gives highest corrosion resistance.

CMP THINSTEEL products can be ordered direct from the mill, or for less than mill quantities or for emergency service needs, from following warehouses:

The Kenilworth Steel Company, 750 Boulevard, Kenilworth, New Jersey, 'phone N. Y. COrtland 7-2427 or N. J. UNionville 2-6900.

Precision Steel Warehouse, Inc., 4409-4425 West Kinzie Street, Chicago 24, Illinois, 'phone COlumbus 1-2700.

The Cold Metal Products Company of California, 6600 McKinley Avenue, Los Angeles, California, 'phone PLeasant 3-1291.

the Cold Metal Products co.

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Here's How You Can Benefit From

SHELL MOLDING

with BAKELITE *Phenolic Resins*

When you design metal parts, ferrous and non-ferrous, with the shell molding process in mind, you can count on several economic benefits to be obtained from this modern foundry casting technique:

- **Castings have almost pattern-smooth surfaces.**
- **Pieces are cast to closer finished dimensions—tolerances as close as .003 to .005 inches per inch.**
- **Higher percentage of sound, uniform castings means fewer rejects.**
- **Better detail minimizes machining operations.**

The shell molding process utilizes thin, lightweight shell molds of fine-grained sands bonded with BAKELITE Phenolic Resins. Your foundrymen can tell you how to benefit from this process. Or, we'll gladly send you information about the BAKELITE Phenolic Resins developed expressly for shell molding, if you'll write Dept. EF-49.

Casting by Walworth Co.,
New York 17, N. Y.

BAKELITE
TRADE-MARK
PHENOLIC RESINS
FOR SHELL MOLDING

TRADE MARK

BAKELITE COMPANY
A Division of Union Carbide & Carbon Corporation
30 East 42nd Street, New York 17, N. Y.
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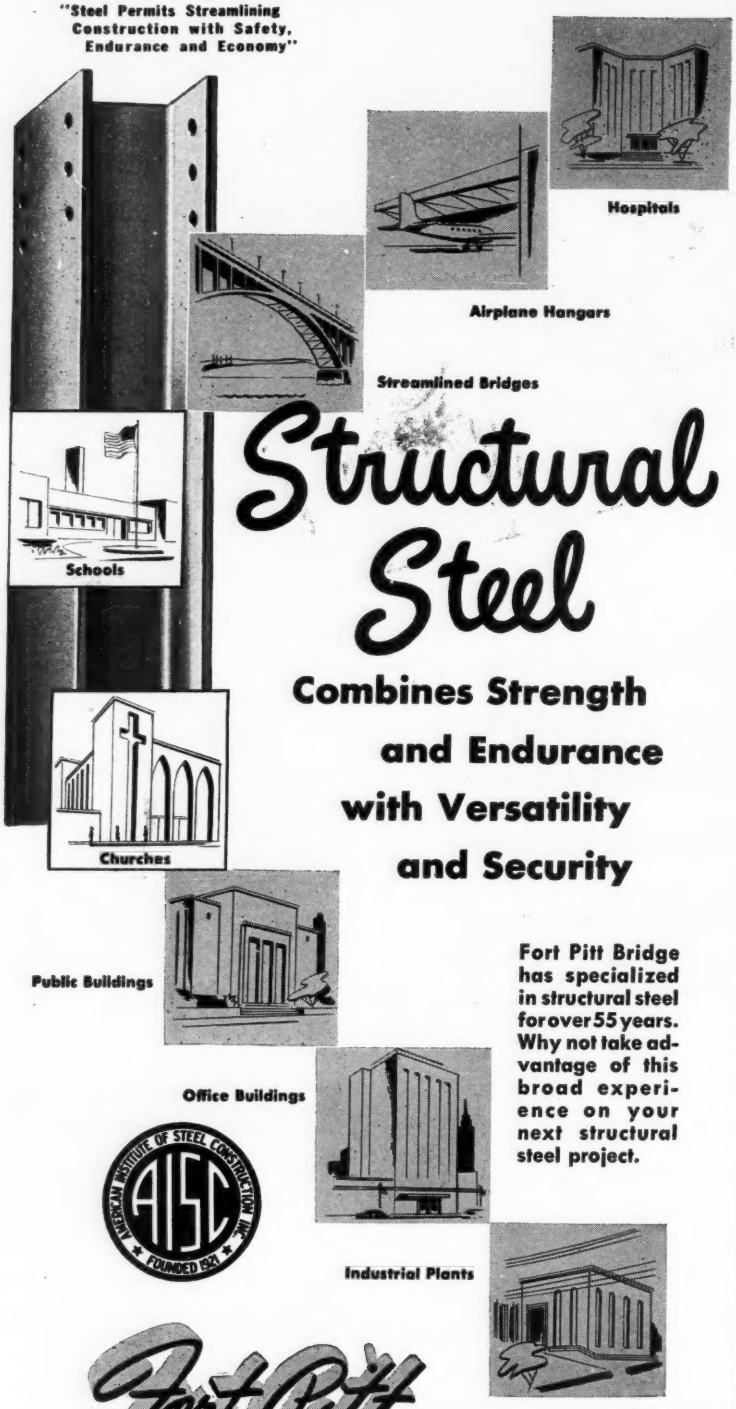
Bakelite Company (Canada) Ltd., Belleville Ont.

"Steel Permits Streamlining Construction with Safety, Endurance and Economy"



Structural Steel

Combines Strength and Endurance with Versatility and Security

Fort Pitt Bridge has specialized in structural steel for over 55 years. Why not take advantage of this broad experience on your next structural steel project.

AISC — American Institute of Steel Construction, Inc. — Founded 1921

Fort Pitt BRIDGE WORKS

Member American Institute of Steel Construction

General Offices, Pittsburgh, Pa. . . . Plant at Canonsburg, Pa.

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Carries Casting Story

Visual aid will help carry the story of steel castings to college students in the classroom

USING a brand-new visual approach to technical education, Steel Founders' Society of America is preparing to carry the story of steel castings to student groups in all leading engineering schools of the nation during the 1952-1953 college terms.

Recognizing increasing emphasis being directed to engineering materials studies, the society has developed 11 new portable display panels specially designed to convey basic information on steel castings to engineering student and faculty groups in their classrooms and lecture halls.

New for Old—New panels supplant an original set of 11 which have been displayed for extended periods in more than 120 engineering colleges and universities since initiation of the program.

Dramatizing the steel castings theme by the use of color, animation and illumination, the 4 x 6-foot panels operate electrically, flashing a series of kodachrome picture combinations featuring significant steel casting applications selected to meet exacting engineering and design requirements.

Push a Button—Once a panel is installed in its setting, a single pushbutton activates the mechanism. Successive flashes illuminate the series of insets in sequence, giving dramatic effect to steel casting advantages and utility as an engineering material rendering service in more than 100 basic industries.

The insets highlight typically important industrial applications and dramatize visually the overall panel theme of steel casting versatility.

As an adjunct to the pictorial story told through the panel, opportunity also is provided for students to obtain authoritative published information on steel casting products and processes, design considerations, properties and general data. Free postal-card request forms are available in a box attached to each display panel, offering various comprehensive society technical publications.

THESE TRUCKS ROLL UP A LOT OF USEFUL MILES . . .

on Mono-Cushions

Mono-Cushions are sure-footed, stable on the short turns. They protect floor surfaces from the heavy pounding of heavily-loaded vehicles. **Mono-Cushions** reduce the effort required to maneuver the trucks and protect the operators from "road shock."

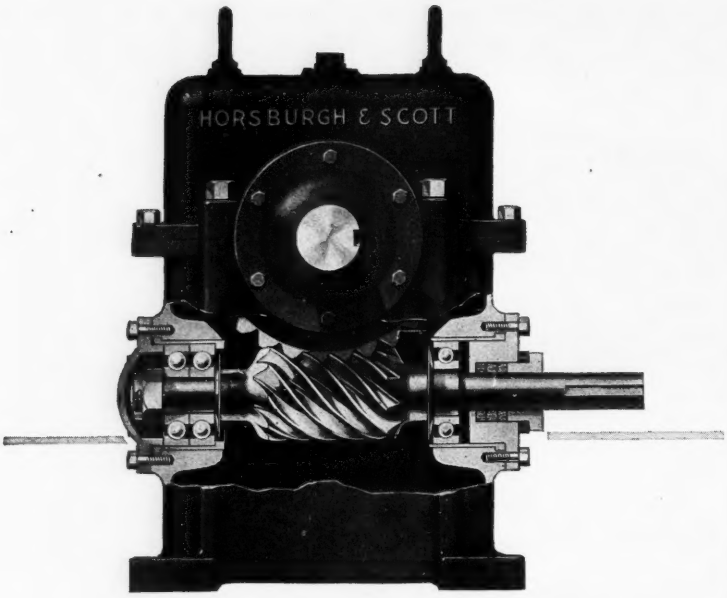
Pound for pound, choose a lift truck and size for size, choose a **Mono-Cushion.**

THE MONARCH RUBBER COMPANY

501 Lincoln Park • Hartville, Ohio

Follow the lead of the manufacturer of your truck. When you need tire replacements, order **Mono-Cushions** *from your truck service man. He knows your trucks best.*

SPECIALISTS IN INDUSTRIAL SOLID TIRES AND MOLDED MECHANICAL RUBBER GOODS



efficient, long life . . .

WORM GEAR SPEED REDUCERS

by Horsburgh & Scott

Every modern element for reducing friction and other losses is incorporated in these reducers...hardened and accurately ground worm made from special case hardening steel, accurately made gear from chilled bronze to H & S specifications, anti-friction bearings, accurate alignment, smooth streamline interiors and proper lubrication. Due to its glass hardness, worm wear is nil...due to its accuracy, gear wear is negligible. Throughout their long life these reducers maintain their initial high efficiency.

10 ADVANTAGES

Extreme Simplicity	Extra Strength
Compactness	Low Maintenance
Efficiency	Oil-tight Housing
Long Life	Quiet Operation
Smooth Transmission	Wide Range of Ratios

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U.S.A.

Send note on Company Letterhead for Speed Reducer Catalog 46

Plant Switcher Is Diesel

Model SH 2190 diesel-hydraulic locomotive, built by Baldwin-Lima-Hamilton Corp., Eddystone, Pa., is a 35-ton, 190 hp unit designed specifically for industrial plant switching service.

Powered by a 6-cylinder, 4-cycle supercharged diesel engine, rated 225 hp at 1800 rpm, the locomotive has a starting tractive effort of 17,500 pounds at 25 per cent adhesion and 21,000 pounds at 30 per cent. Built for track gages from 30 to 66 inches, overall length is 17½ feet and wheelbase is 6½ feet.

Transmission equipment includes a twin-disk torque converter and clutch with two-speed transmission and an axle-hung reverse gear. Speeds are 10.6 and 28 mph. Under frame is all welded steel slabs and plates with pedestal tie bars bolted beneath journal box openings. Journal bearings are roller type. The tension of the heavy-duty roller drive chain, connecting axle assemblies is adjustable by means of journal-box shims.

Aid for Nuclear Engineers

Neutron cross sections — the basic data needed for nuclear science and engineering—are presented on an authoritative basis in a new book now available from the Office of Technical Services, Department of Commerce, Washington.

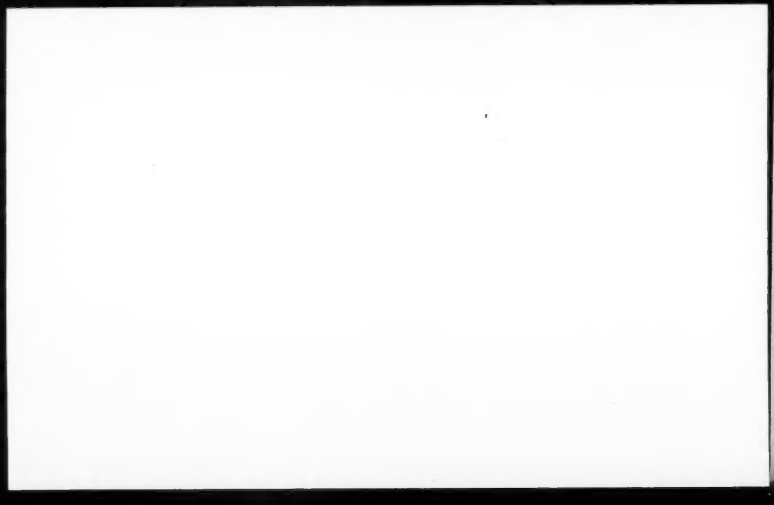
The data, covering neutrons of all energy levels, from 0.0001 electron volt to 100 million electron volts, were compiled by the Atomic Energy Commission's neutron cross section advisory group which evaluated all published or otherwise available neutron cross section data.

The 198-page book is available from the above agency for $1.

Exhibit Announced

Representing the company's engineering service for the steel industry, General Electric Co.'s exhibit at the Iron and Steel Exposition will feature several visitor-manipulated displays. One of these will be a double-thrust pedestal-type bearing, capable of withstand-

READER SERVICE CARD PAGES 115 AND 116
ARE MISSING.



Silent Thief

ROBBING compressed air systems of their efficiency, leaks can be a real production saboteur. Compressed Air and Gas Institute says a gage pressure drop from 90 to 70 psi can drop production 30 per cent. Often the blame is put on the compressor.

Here are some ways to check for the leak:

Most often used are the lighted candle or soapy water methods; one manufacturer puts essence of peppermint into the system, odor gives the leak away; another method is to pass a device which operates like a small whistle. When it passes over the line a siren betrays the leaking air.

ing an oscillating thrust of 235,000 pounds and an instantaneous shock thrust 60 per cent greater.

Another visitor-controlled feature will be the runout table motor with sprayproof construction.

Aluminum Forming Detailed

Most common mistake in the working and forming of aluminum is the attempt to use techniques identical to those used for other metals. So says the manual, "Aluminum Forming," published by Reynolds Metals Co., Louisville, Ky.

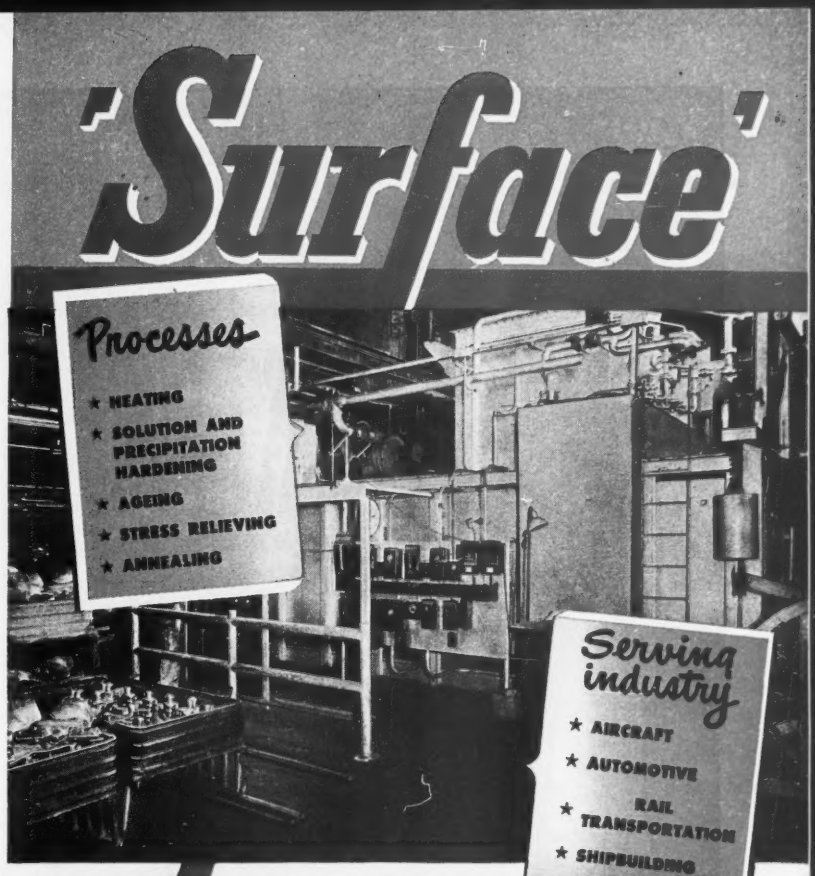
The new 148-page booklet deals with explanations of how to form aluminum as it differs from other metals. Assumption is that readers will generally be familiar with methods and equipment for working the other metals.

Sections are devoted to metallurgical data; one covering aluminum sheet and plate, the other on tubing and pipe. Further sections cover the methods of working these two classes of products.

Grinding Wheel Is 1/16-Inch

Miniature mounted wheels are extensively used for grinding extremely small holes in miniature bearings, bushings, instruments and extremely small holes in miniature bearings, bushings, instruments and for similar precision applications.

Chicago Wheel & Mfg. Co., Chi-



HEATING ALUM M cylinder head forgings at Tube Turns, Inc., Louisville, K urface Combustion convection heated slat conveyor furnace rates at 900 F, producing 4600 lbs/hr net.

Gas-Fired furnaces for
heat treating aluminum

Why use 'Surface' furnaces?

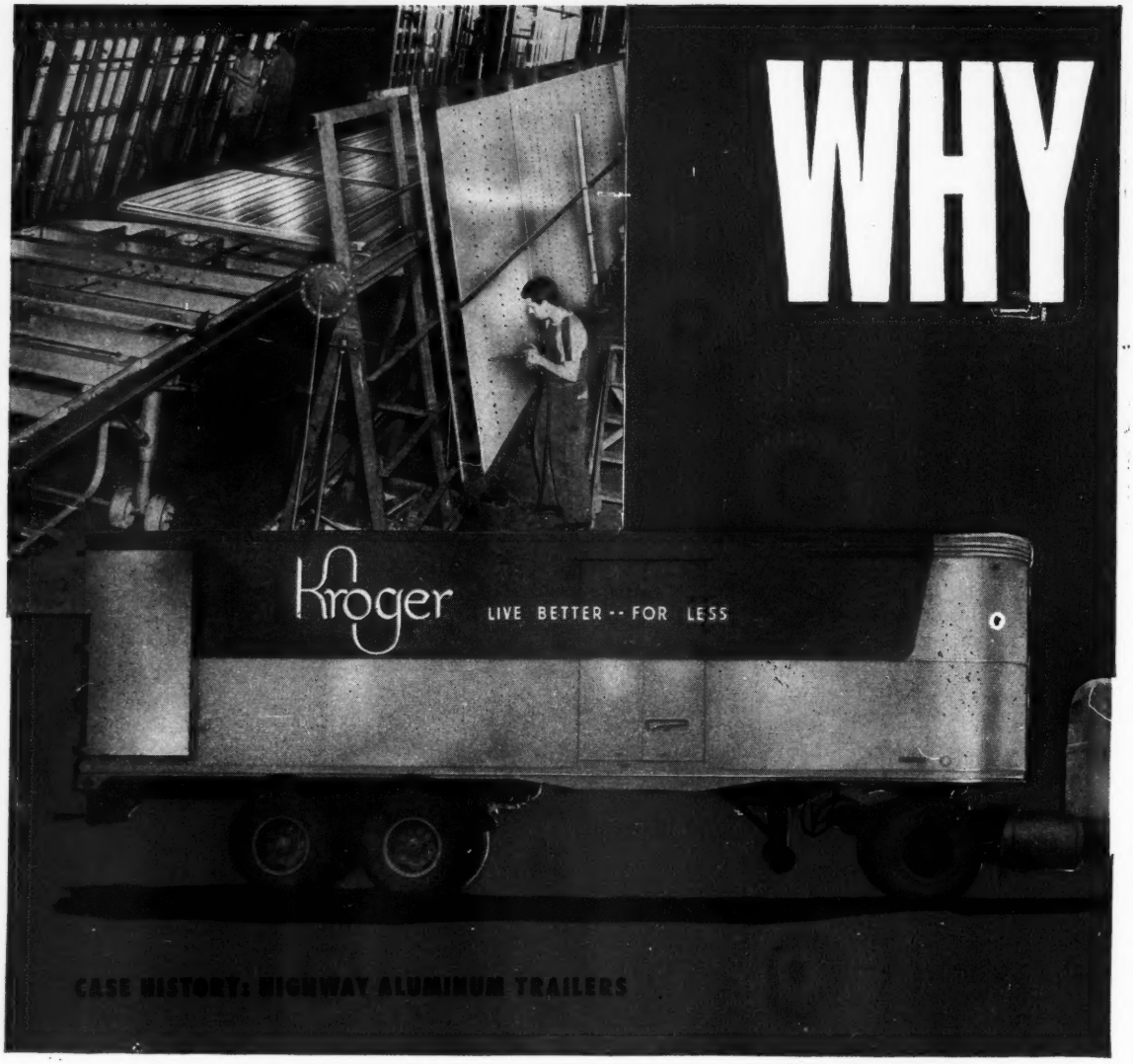
Surface Combustion developed the forced convection type of furnace, which provides maximum temperature uniformity for heat treating aluminum. Also, convection overcomes the reflective properties of aluminum, heating the charge faster and more uniformly than other types of heating. Gas-fired salt bath furnaces for the heat treatment of aluminum and aluminum alloys are also available for special applications.

If you have unusual production requirements, odd-shaped parts, particular shop practices, or space limitations, there's a 'Surface' heat treat furnace to meet your requirements.

Write today.

SURFACE COMBUSTION Corporation
TOLEDO 1, OHIO

'Surface' INDUSTRIAL FURNACES AND BURNERS
Kathabar HUMIDITY CONDITIONING SYSTEMS
Janitrol AUTOMATIC HEATING EQUIPMENT



Aluminum trailers weighing as much as 4000 pounds less than standard steel models mean increased payloads, fewer trips . . . substantial savings per mile traveled. That's why one of America's great food distributors, the Kroger Company with more than 1100 aluminum trailers in its fleet, adopted aluminum as long ago as 1935.

Kroger finds that non-rustable, corrosion resistant aluminum also cuts maintenance and service costs. High reflectivity of aluminum keeps interiors cooler . . . a very important factor in hauling perishables. Kroger reports that to date not a single all-aluminum trailer purchased by them has ever actually worn out! Proof of their satisfaction is reflected in the fact that they have ordered almost 200 more of these units from the Highway Trailer Company of Edgerton, Wisconsin in the past two years.

Highway Trailer engineers and Kroger transportation experts work very closely in designing these trailers to meet Kroger's exacting specifications. And in turn—the knowledge and experience of Reynolds Aluminum Specialists assure both *manufacturer* and *consumer* maximum benefits from strong, lightweight aluminum.

Regardless of the size of the product you're concerned with, chances are that you, like the Kroger Company, can put aluminum to profitable use. Whether you may use several thousand pounds or only a fraction of a pound of metal per item, you'll find you can speed production, enlarge capacity and lower your costs with aluminum . . . the modern metal that improves products and increases sales.

LET ALUMINUM SERVE YOU, TOO

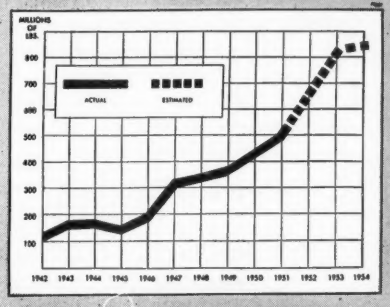
ALUMINUM?

...because it has an ideal combination of advantages found in no other metal!

More aluminum is being specified in designs today because aluminum improves products and increases sales. Let Reynolds Aluminum Specialists help your designers and engineers get maximum benefits from this modern metal. Remember, only aluminum gives you . . .

- ★ **Lightweight with great strength**
- ★ **Consistently low cost**
  no more than before World War II
- ★ **Natural resistance to rust and corrosion**
- ★ **Attractive appearance**
- ★ **Ease of fabrication by modern methods**

STILL MORE ALUMINUM COMING



The expanding primary aluminum production of Reynolds Metals Company . . . a historic chapter in the company's 33 years of continuing growth. And primary supplies of aluminum ore will be ample for generations.

To the man in charge of production

Acquaint yourself with accepted techniques for fabricating aluminum. Write on your letterhead for aluminum fabrication books listed at right. On special problems consult with Reynolds staff of aluminum specialists. Reynolds Metals Company, 2520 South Third Street, Louisville 1, Kentucky.

Yours For The Asking . . .

REYNOLDS TECHNICAL BOOKS

(please request on business letterhead)

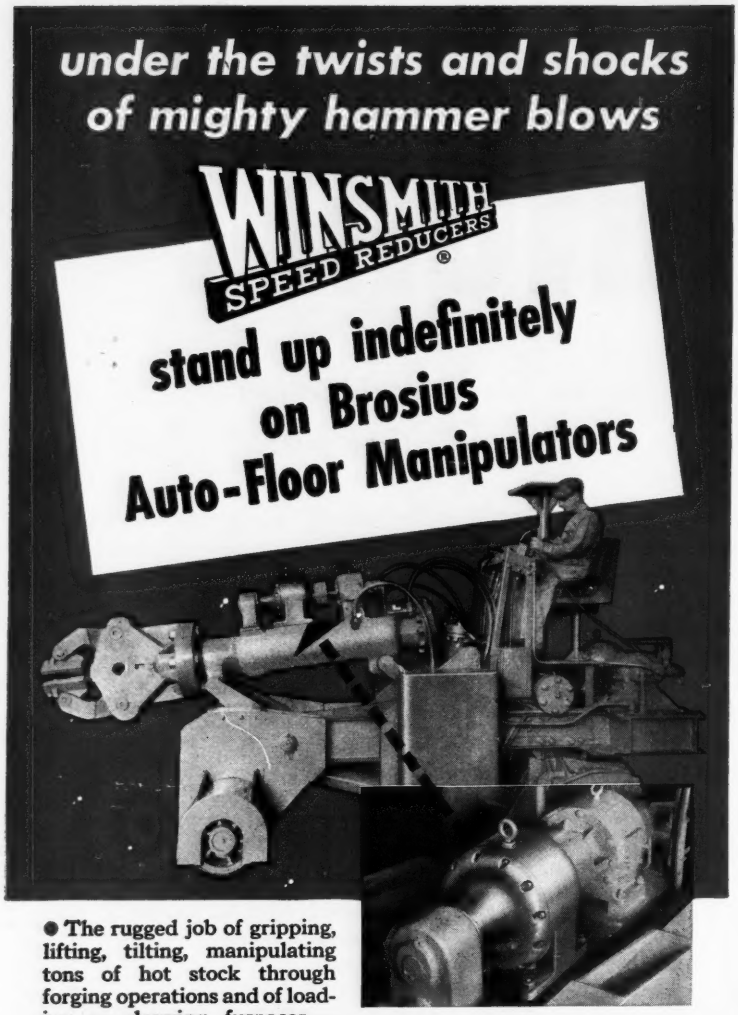
- A-B-C's of Aluminum
  (from mine to finished products)
- Aluminum Data Book
  (Aluminum Alloys and Mill Products)
- Aluminum Structural Design
- Designing with Aluminum Extrusions
- Fastening Methods for Aluminum
- Finishes for Aluminum
- Forming Aluminum
- Welding Aluminum
- Machining Aluminum Alloys
- Heat Treating Aluminum Alloys
- Metals Weight Slide Rule

Complete index of all technical literature and films on aluminum design and fabrication also available.

REYNOLDS ALUMINUM

REYNOLDS METALS

MODERN DESIGNS MAKE ALUMINUM IT WINS



● The rugged job of gripping, lifting, tilting, manipulating tons of hot stock through forging operations and of loading or drawing furnaces — such extreme service conditions subject Brosius Auto-Floor Manipulators to a terrific beating. And day after day they take it and like it, and roll back for more!

For very good reasons, Salem-Brosius, Inc., the manufacturer, is a consistent user of Winsmith Speed Reducers for rotation of tongs heads at 22 to 24 rpm on capacities up to two tons. First, they stand up to the twist and shock of forging operations which are imparted to the spindle and transferred through the speed reducer. Second, they are compact, and being forward of the operator they do not obstruct his view of work being done.

The Winsmith (pat.) Differential Gear Reducer used on the Brosius Manipulator is unique among speed reducers. With it, in one single stage in the same housing, reduction ratios of 1.1:1 to 50,000:1 are obtained smoothly and silently — without need of extra parts.

Good to remember: within the range of 1/100 to 85 hp, Winsmith's four basic speed reducer designs — differential, worm gear, helical gear and worm-helical — provide the most complete line available from any one manufacturer.

Write for informative catalog No. 148.

WINSMITH, Inc.
[illegible] SAXON ST.
Springville (Erie County), N. Y.

cago, is now producing a commercial mounted wheel only 1/16-inch in diameter.

Handling Without Hands

Feature of the automatic turning equipment made by Seneca Falls Machine Co., Seneca Falls, N. Y., is the automatic handling and transferring of work from machine to machine.

New transfer mechanism makes it possible to deliver rough stock to be machined at one end of the line and carry it through the various operations of milling, centering and turning without manual labor.

After each operation work is automatically gaged and if any dimension is not within prescribed tolerances, lights indicate which dimension is off. An electronically controlled system prevents any further machining of off-tolerance work.

Chart Covers Alloy Steels

New chart shows chemical analysis for each of 70 military, Army, Navy aeronautical and federal specifications for alloy steels. Also listed are specified forms such as sheets, bar and tubing and nearest corresponding SAE, AISI and AMS type numbers.

Printed on durable cardboard stock, the chart is regular file card size. It's available from Peter A. Frasse & Co., 17 Grand St., New York 13.

Driller Completed

Announcement is made of the completion of a transfer crankshaft drilling machine designed and built by Avey Drilling Machine Co., Cincinnati.

Machine employs all Avey units and transfer of the crankshaft through the machine is automatic through hydraulic indexing. Production on the above machine approximates 60 crankshafts per hour.

Leaflets for Small Business

Procedures that may be adopted by small businessmen to improve the efficiency of their businesses are outlined in new leaflets issued by the Small Defense Plants Administration.

Leaflets are available from any

and a "right" fastener...

You wouldn't intentionally slow down your production lines with inefficient tools or use the wrong machine for the job at hand. Isn't it equally logical to make sure that every fastening job is done with a fastener that is "just right"?

Differences in hardness and thickness of the tapped material require selection of the right type of tapping screw thread. This, in turn, works best with selection of the right hole size.

Lamson fastener engineers can advise you how to reduce the variety of fasteners and sizes at each assembly station, cut costs and improve assembly. Lamson control of quality and Lamson design produce low drive torques—high strip torques. Solve your fastening problems with Lamson Tapping Screws.

...specify Lamson tapping screws

Lamson & Sessions

The LAMSON & SESSIONS Co.
1971 West 85th St. • Cleveland 2, Ohio
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

Check the products below that interest you; tear off bottom of ad and send to us for complete information.

MACHINE SCREWS
Precision made for fast economical assembly.

SEMS
Pre-assembled lockwashers on tapping and machine screws.

TAPPING SCREWS
Choice of round, pan, truss, flat oval, hexagon and Phillips heads.

CAP SCREWS
"1035" Hi-Tensile Heat-treated steel.

SQUARE AND HEX MACHINE SCREW NUTS
Semi-finished, hot pressed, cold punched.

LOCK NUTS
Economical, vibration proof. Can be used repeatedly.

COTTER PINS
Steel, brass, aluminum and stainless steel.

"1035" SET SCREWS
Cup point type, hardened and heat-treated.

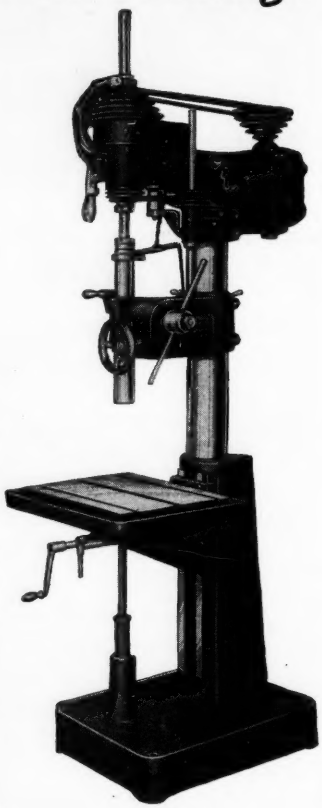
"Buffalo"

Tips on Better DRILLING

RIGID CONSTRUCTION

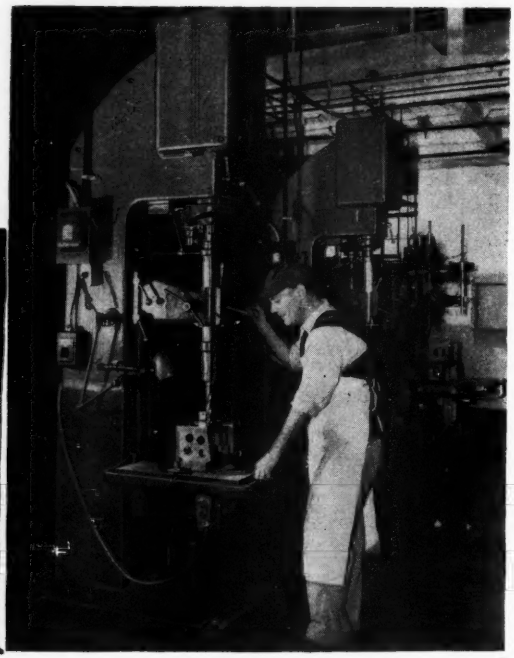
MEANS • Greater Accuracy • Lower Drill Breakage

The less vibration transmitted through the drill spindle, the greater the accuracy in drilling, reaming, and tapping. The large 97"-high "Buffalo" No. 22 Drill at right is a good example of rigid, precision construction which facilitates accuracy. Its 5.5" column, its 17" x 22" and its base are heavy and rigid. Its 1.312" diameter 6-spline spindle is of high carbon alloy steel, heat-treated and ground. It runs in bronze bushings in the feed rack sleeve which is provided with ball thrust bearings top and bottom with end play adjustment. These and other features make "Buffalo" Drills lastingly accurate, as well as easy and profitable to operate.



Above, the "Buffalo" No. 22 Pedestal Drill, ideal for heavy work up to 2" capacity in cast iron, in railway shops, other heavy industries.

WRITE FOR BULLETIN 2989-F.



Right, another example of "Buffalo" accuracy and speed in tool room and production drilling — the "RPMster". Just by moving a lever, the operator can change speeds instantly while motor is running. 99" high. 1½" capacity. WRITE FOR BULLETIN 3257.

DIAMOND JUBILEE 75TH ANNIVERSARY

"Buffalo" MACHINE TOOLS

BUFFALO FORGE COMPANY

158 MORTIMER STREET BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING PUNCHING SHEARING CUTTING BENDING

of the SDPA field offices. Subjects covered are incentive techniques and the process of metallizing.

Automatically Balanced

Machine weighs pistons and automatically removes the right amount of stock for balance

EXCELLENT case of automatic machining is the piston balancing machine made by Morris Machine Tool Co., Cincinnati. Pistons are not even checked for weight by hand.

The machine selects pistons for machining and discards both the overweight (above limits) and the underweight.

Here's how it's done. Pistons are automatically fed to the balancing machine by gravity along a channel type conveyor. They must first pass a testing mechanism which determines whether or not they are in proper position to be received by the machine.

If a piston has been fed to the conveyor in an inverted position, a test finger will strike the piston head and linkage controlled by the finger serves to lock the piston in position until it has either been inverted or removed from the conveyor line.

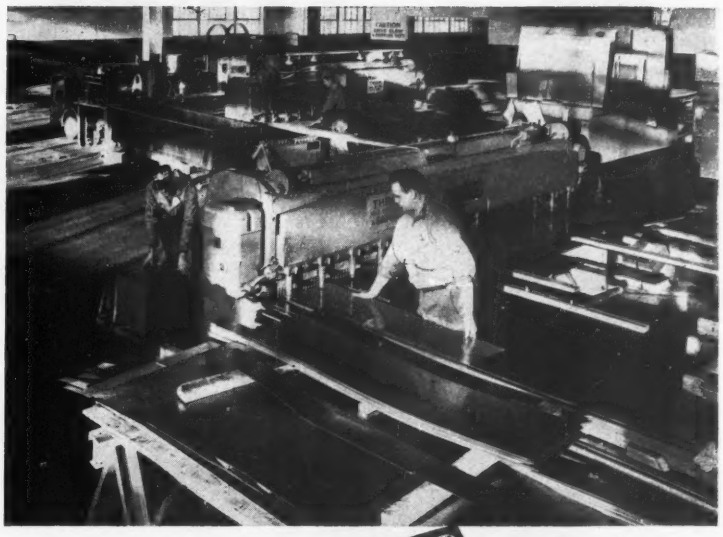
Sorting — Pistons which are passed by the finger move on to be initially weighed and weight graded.

If the piston weighs less than the designed piston weight, it is rejected from the machine and passes out through an underweight chute. If it weighs more than the designed piston weight, and the excess weight exceeds a predetermined maximum, the piston is rejected through an overweight chute.

Pistons which are overweight, that is equal to or less than the maximum, are allowed to pass on. The overweight and underweight chute doors are solenoid controlled by the weight grading scale.

Pistons that are within the prescribed weight limits are gravity fed along the conveyor to a second scale. A piston advancing mechanism allows the foremost piston to move to the second scale and arrests the pistons which follow.

Determines Depth—As the piston rests in the pan of the second



Are You Getting Your Cut!
Many industrial steel users are getting the cut they want through Holliday's complete precision shearing and sawing facilities. By placing their steel orders with Holliday for sheets, bars and plates, and other steel products, their requirements are delivered cut to the exact specifications.
Cutting is done as a service to our customers—some products being cut to length free of charge and others carrying a nominal charge for cutting to length.
A constant flow of all steel products enables us to efficiently flame cut, friction saw, shear, abrasive cut, slit, and hack saw much cheaper than within most manufacturing and industrial plants, if consideration is given to investment in men and machinery needed to perform these operations.
Holliday can do it more accurately and more quickly, so the next time you need steel, let us give you your cut. Place your next order with Holliday.
We also stock hot and cold rolled strip, structurals, plates, hot and cold finished bars, stainless, tool steel, boiler tubes, pipe, and countless other items.
Our many services include roller leveling, breaking and bending, punching and slotting, stress relieving, grinding, and many others.
SINCE 1856
W. J. Holliday & Co. INC.
TWO LARGE PLANTS TO SERVE YOU!
Indianapolis and Hammond, Indiana
PHONES—Indianapolis: Plaza 2422 Hammond: Sheffield 8000 Chicago: Essex 5-2300

STERLING'S "FOUR POINT

HELPS PRODUCE BETTER FA

THE STERLING GRINDING W

T PRODUCTION CONTROL"

ER FASTER FOUNDRY GRINDING

Test these superior "Wheels of Industry" on your own machines . . . prove to your satisfaction the faster production you can steadily maintain with them.

STERLING'S "Four-Point Production Control"—through ENGINEERING, COMMITTEE, LABORATORY, and MANUFACTURING—means better grinding wheels for all types of foundry jobs.

Sterling's ENGINEERING determines, right on the job, what is the correct abrasive unit to solve your particular problem. COMMITTEE control gathers together Sterling grinding experts for careful checkup of your needs before recommendations are made. LABORATORY control takes these recommendations and builds them into the correct wheel formula. Then and only then, does MANUFACTURING, carefully controlled, take over to produce what has been given a triple checkup. No wonder Sterling Grinding Wheels do such efficient jobs of swing frame, stand and portable work! They are tailor-made for every assignment!

Foundrymen have learned through experience to specify Sterling Grinding Wheels because our specification-duplication means identical, better results wherever these abrasive units are used.

In your grinding departments, Sterling's "Wheels of Industry" can produce startling results. Our engineers are ready to explain how easily it can be accomplished.

BEST IN THE TEST—THAT'S STERLING!

● During a recent test of Sterling High Speed Snagging Wheels, size 24 x 3 x 12, the department foreman reported them the best grinding wheels they had ever used on miscellaneous alloy steel castings. Comparison proved the Sterling Wheels were freer cutting and provided 12% more life than other brands tested! Think of it — six hours of extra efficiency from the Sterling "Wheels of Industry" at no extra cost!

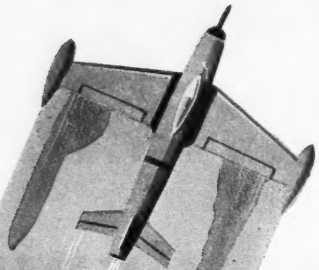
These results are typical and indicate the ease with which you can solve your problems with Sterling Grinding Wheels.

Ask for These STERLING Research and Development Folders - - -

● When sudden decisions must be made regarding proper grinding wheels to use, you will find these folders handy to have in a nearby file. You will appreciate having the interesting data to study while waiting for the Sterling engineer's call. Especially important is the popular book, "The Art and Science of Grinding," now in its 10th edition. There is no obligation . . . just send us your name and address and your folders will be mailed at once.

GWHEEL DIVISION TIFFIN OHIO

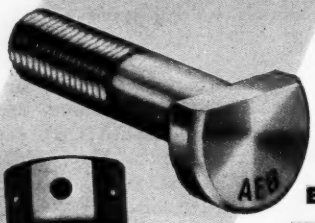
CAMCAR
COLD-FLOWS



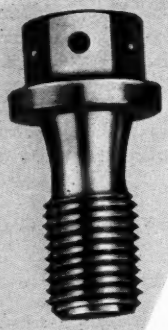
6-DIGIT AN BOLTS

ENGINE BOLTS

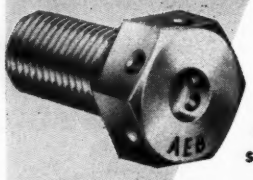
to highest degree of Tolerances, Tensile Strength, Quality—
In High Heat-Resisting Alloys!



MOST CRITICAL
BOLT APPLICATION IN
JET-POWER PROGRAM



Sources for Jet-program requirements of this calibre are selected by *proven performance*. Camcar has the distinction of being a major source chosen for high-volume supply to principal Jet Engine Manufacturers.



Camcar's Cold-Flow techniques and tooling abilities make it possible to meet such rigid requirements of quality, close tolerances and tensile strength — *consistently*.

AEB identification on each piece assures you of Camcar quality.

Telephone **5-9451** / *Teletype* **RK-8653**

CAMCAR SCREW & MFG. CORP.
603 EIGHTEENTH AVE., ROCKFORD, ILL.

"PRODUCTION-DESIGNED FOR YOUR ASSEMBLY LINE"

Stays on Top

GETTING SWAMP BUGGIES to walk across the top without sinking into the mud led to development of a veritable monster among tires.

Pioneered by R. G. LeTourneau and built by Firestone Tire & Rubber Co., the tubeless giant is ten feet tall and four feet wide. It operates on a pressure of from 10 to 15 pounds. It will carry a tire load of 17,500 pounds at 20 mph. Weight of the tire is 1482 pounds.

scale, its weight is recorded by the position of the scale beam. A dashpot dampens the beam oscillations. When the beam comes to rest, the beam is clamped in place to record the weight of the piston. The position at which the scale beam is locked determines the depth of cut to be made by the milling cutter.

After the piston has been weighed on the cutter setting scale, the piston is raised from the scale to a cutting station by means of a transfer arm.

At the cutting station, a collet is brought down on the piston to fix the piston while the milling cutter is advanced along the axis of the piston internally.

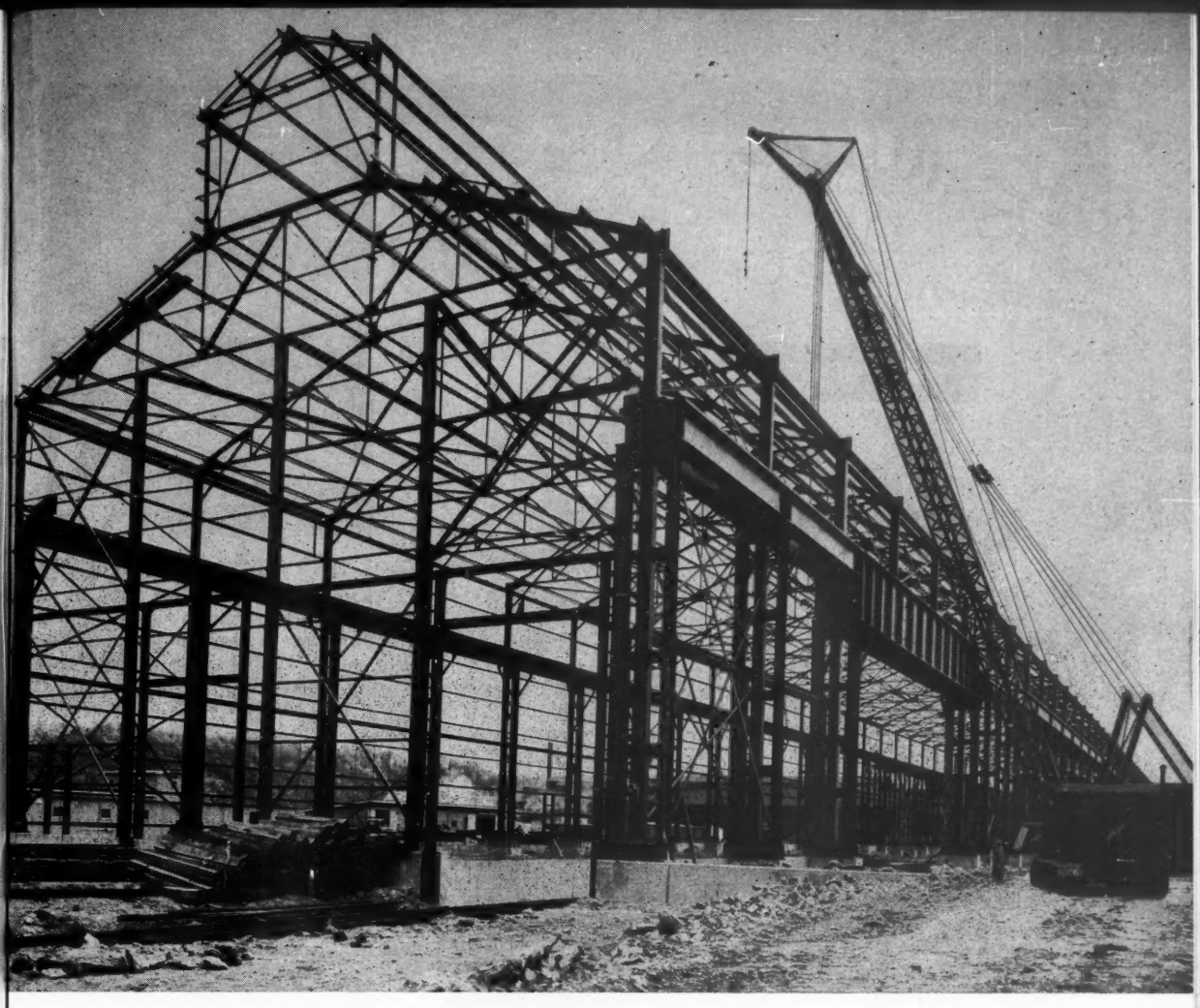
The piston pads are then trimmed to the predetermined setting of the scale beam to bring the weight to the designed limit within an accuracy of plus-or-minus one gram. A suction chute draws the chips off.

After trimming, the cutter is retracted from the piston and the piston is transferred from the cutting station to a dischage conveyor by by a pusher arm.

To Tell About New Alloy

A technical paper to be presented during the annual convention of the Association of Iron and Steel Engineers, Sept. 30 to Oct. 3 in Cleveland, will include details of a new high temperature alloy.

The authors, M. N. Ornitz, works manager, and R. H. English, chief metallurgist, National Alloy Steel Division, Blaw-Knox Co., Pittsburgh, say that the alloy has properties that permit practical engineering applications at tempera-



Progress in Steel . . . *Means More Sheet and Strip*

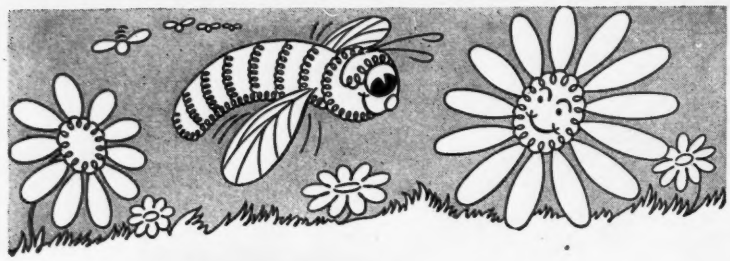
The huge steel skeleton above is the beginning of one of several structures being built to house the new 66-inch Sheet-Strip Mills at the Pittsburgh Steel Company's Allenport Works. From these mills will come hot and cold rolled sheets to supply this vital material to manufacturers of a multitude of defense items and civilian goods.

The construction of these new mills is an important part of Pittsburgh Steel's Program of Progress which has as its objectives increases of 82% in finished product capacity and 50% in ingot capacity. It includes the acquisition of the Thomas Steel Company, now operating as the Thomas Strip Division, the installation of the new 66-inch High Lift Blooming-Slabbing Mill, which will roll slabs for the new Sheet-Strip Mill. Blast Furnace and Open Hearth capacities are also being greatly increased. All this is being done to expand production and diversify the Company's line of wire, tubular and flat-rolled products in order to serve customers better.

This Program of Progress at Pittsburgh Steel Company is typical of the activity in the steel industry which daily grows larger and stronger in order to help keep this Nation's commanding position in the world. For it is only with an adequate supply of steel that we can defend ourselves from aggression—maintain a high level of civilian economy as well.

Pittsburgh Steel Company

Pittsburgh, Pennsylvania



A very good solution to your spring problem. See the man with a

Versatile Torrington Spring Coiler

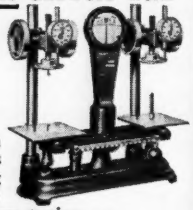
In spring coiling, the words "Torrington" and "Versatile" are synonymous! When you desire springs produced to meet exacting requirements, just call the professional springmaker who has a Torrington coiler. He's the man who can fill your needs with accuracy, speed and economy. On special springs, our sales department will gladly assist you in finding a source of supply, or help your springmaker devise just the right tooling to produce it.

Torrington's 14 different Spring Coilers cover a range of wire diameters from .003" to .750"

MODEL W-11 SPRING COILER

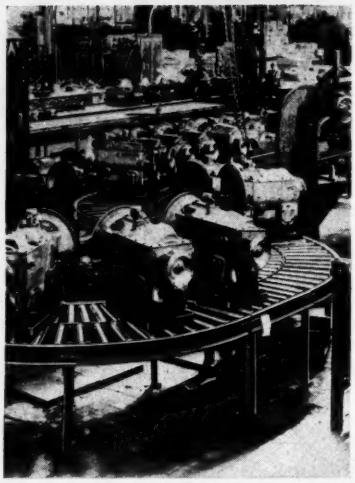
Wire diam. range: .015" to .072". Length per spring: 0" to 42". O. D. Coil Range: 3/32" to 1 9/16". Produces 23 to 190 springs per minute with variable speed drive. Extra wire feed gears, torsion, other attachments available.

NOW... Spring Makers and Users can get the same answers with The TORRINGTON SPRING TESTER



An accurate, uniform and inexpensive means of measuring spring load and deflection! For inspection or in-use testing . . . to aid in designing and developing springs for specific uses or as a basis for statistical quality control. Write today for illustrated bulletin on the Torrington Spring Tester!

The TORRINGTON MANUFACTURING COMPANY TORRINGTON, CONNECTICUT



Conveyor Speeds Assembly

Records at Spicer Mfg. Division of Dana Corp., Toledo, O., show that this new Buschman roller conveyor system in transmission assembly has cut costs about 50 per cent. Units formerly were assembled on benches

tures up to 2200° F. This permits an increase of 200° F over previous practical design for alloys.

According to the authors, use of the alloy allows higher load carrying capacity at the elevated temperatures. It already has been thoroughly tested in many types of industrial applications, proving to be of positive economical advantage.

Welding Equipment To Be Shown

Turning roll, two idler rolls and three welding positioners will be exhibited by Worthington Corp. at the National Metal Exposition at Philadelphia in October. Members of the company's engineering and sales division will be on hand to explain its line of manual and motor operated positioners and its line of turning rolls.

Tests Quartz Angles

United States Testing Co., Hoboken, N. J., tells about the development and production of a fixture of universal application in the identification by x-ray diffraction of quartz plate atomic plane relationships.

Apparatus has been in operation in their own plant for over a period of six months. It's worked con-

DUCTALLOY

Ductile Iron

for INTRICATE CASTINGS

Intricate fire-control housing cast in DUCTALLOY

QUALITY CONTROL
Every casting is represented by test bars, the physical properties of which meet or exceed minimum specifications.

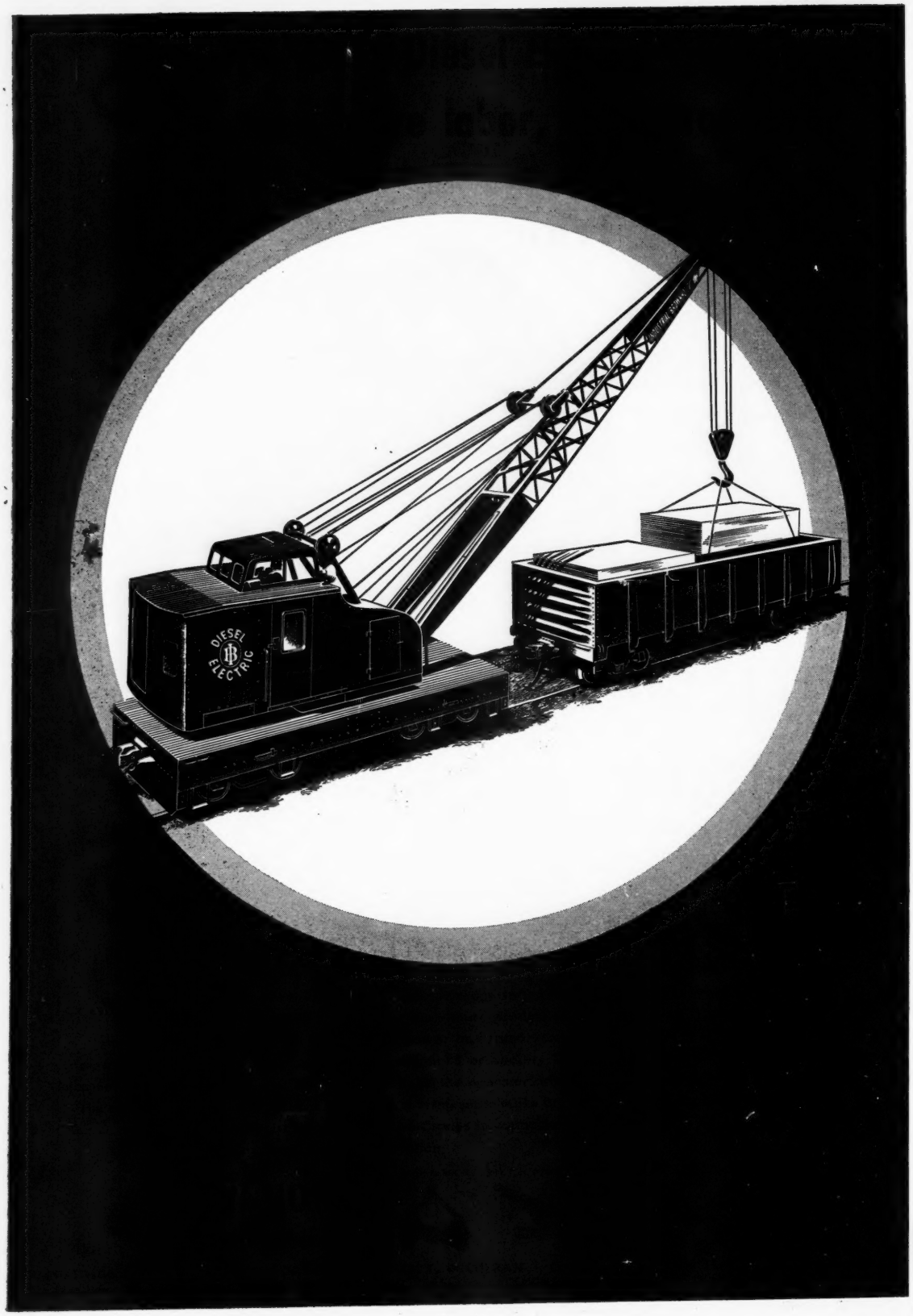
DUCTALLOY, the new cast iron, combines high tensile strength with good fluidity. These qualities make it particularly valuable for intricate castings that would be difficult to cast in steel, but would not be strong enough in gray iron.

DUCTALLOY'S spheroidal graphite structure increases pressure tightness compared to flake iron. It machines easily and the machined surface compares favorably with that of steel.

Strength, toughness, machinability and many other desirable qualities make DUCTALLOY an exceptionally useful and economical material for a wide range of applications. Write today for information about its many possibilities and advantages.

American Brake Shoe Company

BRAKE SHOE AND CASTINGS DIVISION
230 Park Avenue, New York 17, N. Y.


DIESEL
ELECTRIC

tinuously without breakdown or maintenance. They show an increase from 1500 x-ray readings per machine per eight hour day to an average of 8500 readings per machine for the same period.

Fixture is called the "production quartz plate apparatus" and is designed for rapid check of crystal plate x-ray angles on a production basis. It can be used with various x-ray diffraction units currently in use and is intended for use by machines to be designed for similar application.

Human Relations at Work

Clerical cost control gets human relations added to the formula. Efficiency goes up 17 per cent

NEW METHOD of clerical cost control is based on the principle that employees *want* to do a fair day's work and are eager to measure their contributions by the use of objective yardsticks. It has proved itself by actual test over a six-month period at Fisher, Rudge & Neblett Inc., New York.

Although the effort coincided in part with a seasonal low in the firm's business, the overall efficiency of this office group improved gradually from 73.6 per cent prior to the establishment of the controls to 86.1 per cent—an increase of 17 per cent at the 20th week of operation.

Set Sights at 90—At the end of the 26th week, the high level of efficiency continued to be maintained. Larger gains are anticipated as the firm's work load returns to normal. The target minimum is 90 per cent.

Company feels the program's effectiveness can be attributed to its wedding of cost reduction and improved morale. They say that human relations methods were coordinated with technical engineering in designing and installing the program. Training is also an integral part of the program.

Unlike most systems for controlling clerical costs, which use predetermined or intuitive standards to measure employee productivity, the plan tailors special standards to meet specific needs. Both company requirements and employee abilities are reflected in the yardsticks developed. Job analysts work closely with employees to prepare suitable job descriptions, to determine the volumes of work and to measure the time it takes to perform such volumes. Once standards are agreed upon, employees accept their fairness and strive to meet or better them.

600-Hp Compressors Installed

Catalytic cracking plant being built for Frontier Oil Refining Corp. at Tonawanda, N. Y., will have the first of the Worthington Corp., Harrison, N. J., new high-speed balanced opposed compressors to be driven through gear reduction sets by explosion proof motors.

Each of the two 600 hp balanced opposed type two stage compressors will be operated at 327 rpm and driven through Farrel-Birmingham gear reduction sets by 1800-rpm explosion proof induction motors.

Balanced opposed frame is so constructed that no inertia forces are transmitted to the foundations. All main bearings and crankpin

PAINT STEEL

CLEAN OR RUSTED

WET OR DRY

WITH

TYGORUST

TYGORUST is the new "no-prep" vinyl primer that adheres tenaciously to steel and iron—clean or rusted—wet or dry. It applies easily by brushing or spraying. It covers up to 600 square feet per gallon. It dries hard in minutes. It can be top-coated in an hour, or less. It provides excellent adhesion for all types of finishes. It inhibits rust formation. It has good chemical resistance.

TYGORUST can also be used to prime concrete, wood, and previously painted surfaces (asphaltic coatings excepted). It is particularly recommended as a primer for chemically resistant, vinyl-based coatings.

For minimum surface preparation, use TYGORUST! For maximum chemical resistance, use TYGORUST top-coated with TYGON "Series TP" Paint!

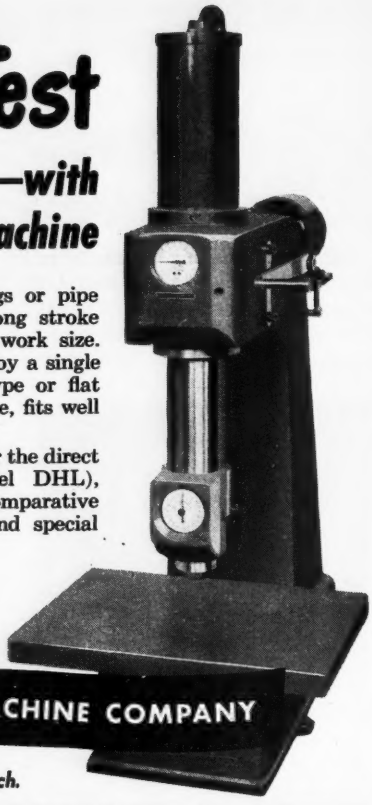
WRITE TODAY FOR FULL DETAILS!

398C

THE U. S. STONEWARE CO.
Plastics and Synthetics Division
AKRON 9, OHIO

Brinell Test

large pieces fast—with this long stroke machine



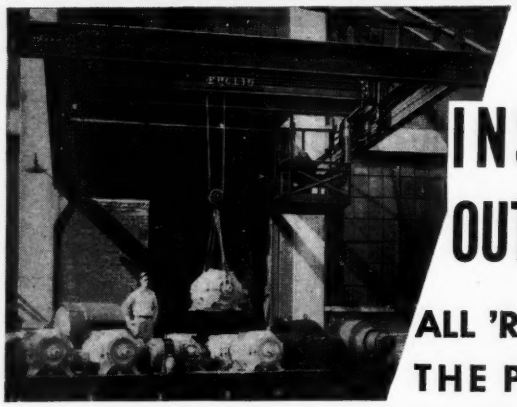
Large awkward castings, forgings or pipe are easily tested because the long stroke eliminates screw adjustment to work size. The hydraulic ram is controlled by a single lever. Large, stationary roller-type or flat table makes work handling simple, fits well into a conveyor line.

Choice of plain Brinell machine or the direct reading machine (shown, model DHL), where dial at end of ram gives comparative hardness immediately. Larger and special machines may also be had.

Write for more information on all our Brinell testing machines.

DETROIT TESTING MACHINE COMPANY

9390 Grinnell Ave., Detroit 13, Mich.



INSIDE OUTSIDE ALL 'ROUND THE PLANT

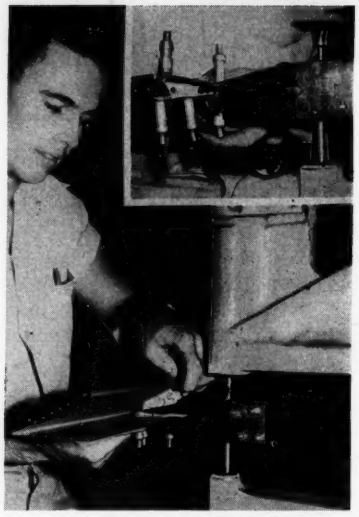
For best results the type of material handling equipment selected must be determined by the nature of your business and its manufacturing operations.

The size of products — the type of units involved — the sequence of operations — the nature of assembly activities and other factors must be considered.

There is a Euclid crane or hoist ideally adapted to a large majority of these situations — inside—outside—all 'round the plant. Let us discuss them with you. Meanwhile, let us send our catalogs.

THE EUCLID CRANE & HOIST COMPANY
1365 CHARDON ROAD, EUCLID, OHIO

EUCLID CRANES AND HOISTS *Raise Profits*



Iron-Jawed Alligator

Small alligator attachment, used as an accessory on Chicago Pneumatic riveters by Temco Aircraft Corp., Dallas, squeezes rivets in hard-to-reach areas of trim tabs. The unit's two tapered jaws are mounted together by a pivot. A rubber cushion between the jaws holds them together until machine is energized and rivet shot

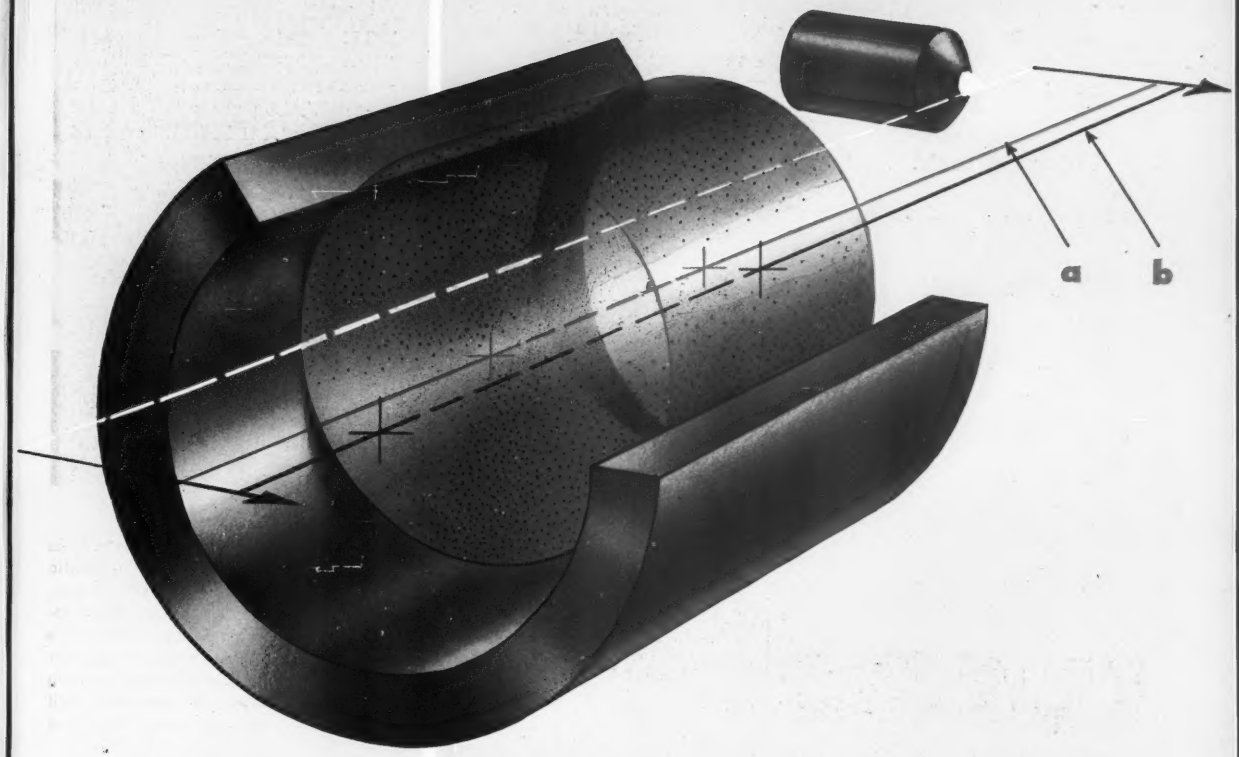
bearings are of the precision type, centrifugally lined with a thin coating of babbitt. All working parts are bathed in oil from a forced feed system.

Welders on Tour

Members of the Aircraft and Rocketry Panel of the American Welding Society toured the San Diego plant of Solar Aircraft Co. and saw demonstrations of many of the 275 welding installations. Solar-made machines included butt welders, special purpose spot and seam welders, sigma welders and submerged arc welders.

Level Measures Inaccuracies

An optical level for measuring flatness, straightness and parallelism reads deviations from the horizontal of 0.00012-inch per foot of length or 0.00001-inch per inch of length. Made by F. T. Griswold Mfg. Co., the level can be moved along the surface 7 inches at a time or in shorter increments. By taking a series of readings entire length of surface can be checked and plotted on graph paper.



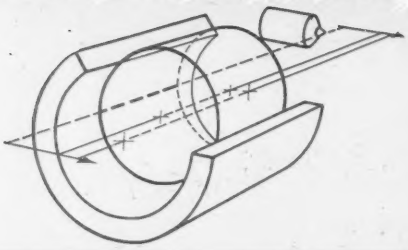
bryant
internal grinding

THE heart of the internal grinding process is the line of contact between the wheel and the work. This contact line must be straight for the full length of the wheel and the full length of work as the wheel traverses. If the contact is not a straight line, the internal grinder is "out of line". Improper alignment may show up in the work as incorrect hole geometry (bell-mouth or taper) and poor surface finish. In addition, excessive wheel wear and poor wheel action may result.

Several elements contribute to the straightness of this line of contact: first, the path along which the wheel is traversed "a" must be a straight line; second, the axis of the wheel must be parallel to the wheel path "a", and third, the axis of the work "b" must be parallel to the wheel path "a". For production grinding, the diamond must lie in the plane established by the wheel axis and the work axis.

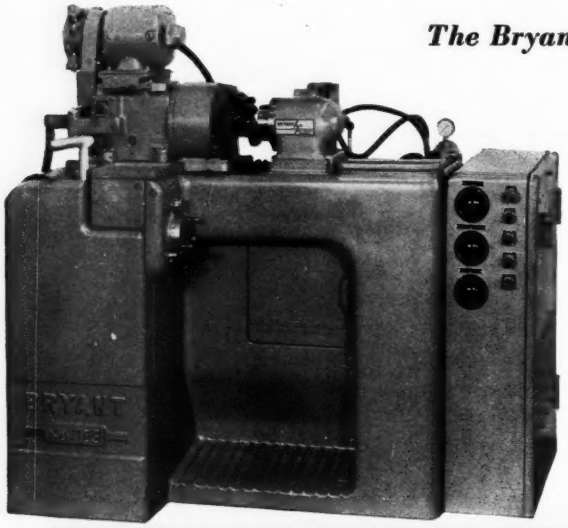
Perfect alignment means that the slides must be straight and true, the wheel and work spindles must be in line and "zeroed" for center heights and the diamond must be on "dead center" of the wheel. A full, straight line of contact will extend wheel life, improve wheel action, and will assure correct geometry and required finish.

Bryant Chucking Grinder Co. Springfield, Vermont



bryant
internal grinding

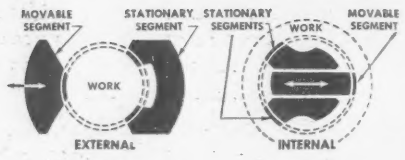
Accurate alignment of various machine elements is a basic consideration on even the simplest machine tool. Industry's demand for increased production and accuracy makes the alignment problem more critical than ever before. Bryant machines are designed so that they may be aligned, and this alignment may be maintained throughout the life of the grinder. Alignment and its effect on precision hole grinding is discussed on the preceding page.



The Bryant 1109 Precision Internal Grinder

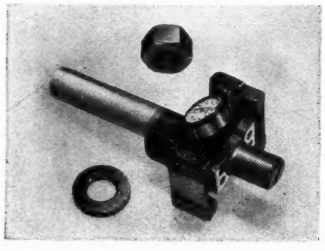
THIS semiautomatic machine is intended primarily for grinding bores under 1" diameter. It has chuck swing of 9" and maximum grinding stroke of 3½". Sensitivity with rigidity are obtained by using preloaded ball slides for both cross and longitudinal movements, which transmit load directly to machine base. The Bryant Hi-Frequency Wheelhead is standard equipment, and provides speeds up to 100,000 R.P.M. for efficient surface speeds on small diameter work. Write for full information.

Bryant Chucking Grinder Co., Springfield, Vermont, U. S. A.



bryant
thread gaging

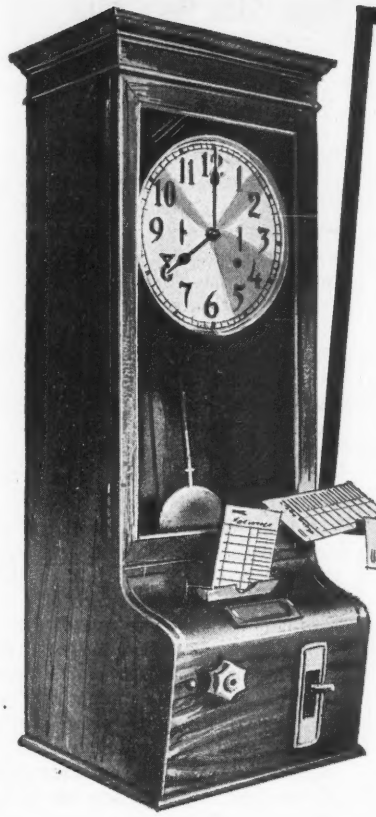
Bryant gages are built on the principle of an "expanding" master plug for checking internal parts, or a "contracting" master ring for checking external threads. A dial indicator gives a reading of P.D. which includes variation in thread form and lead. This is an accurate indication of assembleability.

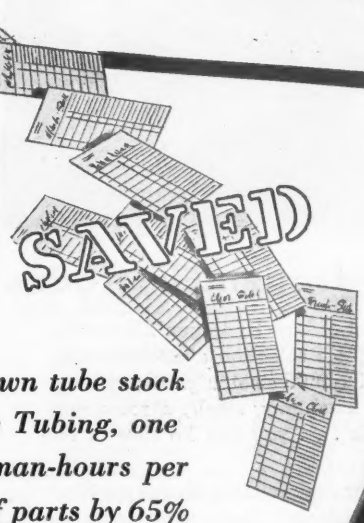


The Bryant P-11 Portable Thread Gage

THIS is basically a split plug gage, equally effective for bench inspection or for gaging internal threads on parts still held in the machine, or in large work that is difficult to move to the inspection department. *4 to 5 times faster than plug gaging!* Standard range from 5/16" to 5" in diameter. Write for catalog describing full line of Bryant Thread Gages.

1000 man-hours eliminated with ROCKRITE TUBING





By switching from cold drawn tube stock to accurately sized Rockrite Tubing, one manufacturer saved 1000 man-hours per year... reduced machining of parts by 65%

THE REASON? All boring and reaming operations were eliminated. Only simple honing and cut-off were needed to produce finished parts from compression-formed, precision Rockrite Tubing. • Yes, there's an "efficiency expert" built right into Rockrite Tubing because it is sized to *closer* tolerances by a distinctively different process. In ring-shaped and cylindrical parts, for example, you get 50% more finished parts per pound, double the output of parts from automatic screw machines, lower total cost per part. • Write for Bulletin R2. It tells why you can *bank on* Rockrite Tubing to make important production economies.

ROCKRITE® TUBING

TR-134A

TUBE REDUCING CORPORATION · WALLINGTON, NEW JERSEY

Use ARCOS Low Hydrogen Electrodes

As a pioneer in the development of Low Hydrogen Electrodes, Arcos offers you the most complete selection available today. Whether your job involves welding mild steel, high strength-low alloy steels, sulfur-bearing free machining steels, chrome-moly steels, or low nickel alloy steels . . . you can be sure of the results you want.

Since 1942 Arcos has been turning out Low Hydrogen Electrodes under Stainless "quality controls". That's your assurance of consistently sound, high-strength welds on every job. It means there's nothing experimental about Arcos Low Hydrogen Electrodes. They've already been "tested and approved" on armor welding as well as commercial applications. ARCOS CORPORATION • 1500 South 50th St., Philadelphia 43, Pa.

WELD WITH ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes

Tape Aids Belt Back

Strapping tape is applied to the back of abrasive belts. Greater load capacity results

WHERE abrasive belts are to be subjected to excessive loads, they may be strengthened quickly and inexpensively with a backing of pressure-sensitive Fiberglas-reinforced strapping tape.

Investigation by the product engineering department of Behr-Manning Corp., Troy, N. Y., indicates that this simple modification may often permit the use of these belts for fast removal of metal and in fining operations formerly considered too severe for commercial equipment of this type.

Rolled On — Reinforcement is done by lining the cloth side of the belt with a lamination of the tape. A simple arangement of pulleys can be set up to expedite the job. Two pulleys are mounted in tandem and the belt is placed over them. A roll of strapping tape is mounted on a spindle between the pulleys, and the lead end of the tape is attached to the underside of the belt. By rotating the belt, the tape will be drawn from the roll and pressed to the back of the belt as it passes over the first pulley.

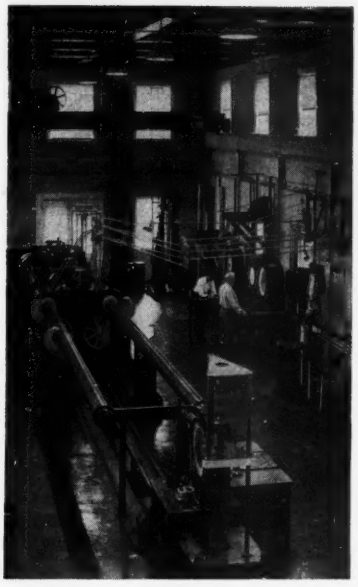
In addition to increasing the tensile strength of the backing of the belts, the lamination of tape reinforces the belt joint and increases the crosswise rigidity of narrow belts ¾-inch or less in width. Edge bowing and twisting are eliminated.

Replacing canvas or mattress ticking setup belts with coated abrasive belts so strengthened does away with problems of wild grain marks, shedding and ravelling. It also reduces the annoyance of make-ready, cuts setup time and minimizes maintenance of setup equipment.

X-Ray Speeds Testing

A new 250-kv industrial x-ray unit installed recently in the Sunnyvale, Calif., plant of Westinghouse is expected to pay for itself in less than 5 years through savings on rental of radium alone.

In addition, the company says, the machine can x-ray metal speci-



Tester Is Rejuvenated

This 72-year old United States testing machine has been brought up to date with the addition of auxiliary equipment. It now has the features of present Baldwin-L'ma-Hamilton testing machines. Added were four Emery hydraulic load cells and Tate-Emery control system with three-range indicator

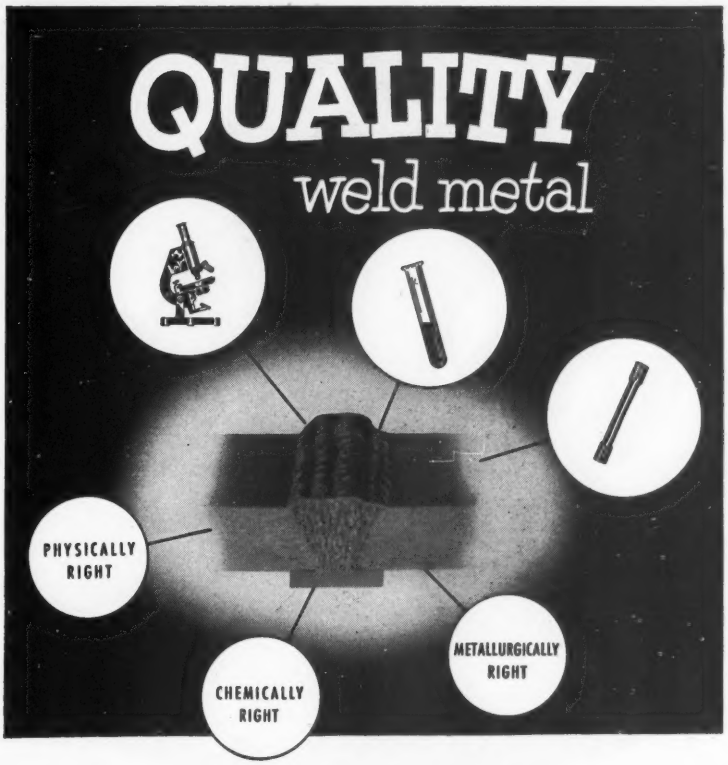
mens 50 to 60 times faster than it was possible previously through the use of either radium or radioactive cobalt.

Built by the company itself, the unit will be used to explore castings and weldments for internal defects. Specimens up to 2½ inches thick are x-rayed by the machine.

New Diesel Announced

New high-speed diesel engine is in production at Caterpillar Tractor Co., Peoria, Ill. Designated the Cat D326, this engine is offered in industrial, electric set and marine arrangements. Its announcement follows last year's introduction of the Cat D337, similar in many ways but built for a higher horsepower output.

With the engines came new developments in the Caterpillar fuel injection system of individual pumps and valves. Pumps are mounted adjacent to the cylinders they serve, and the fuel lines made short and identical. These pumps, as well as the intake and exhaust



Use ARCOS "Quality Controlled" Stainless Electrodes

The production of top-flight welds largely depends upon the inherent qualities of the weld metal. That's why Arcos Stainless Electrodes must pass so many "quality controls" in manufacture. It's your protection for soundness, specific mechanical or corrosion resistant properties, or microstructures that can stand up to destructive service conditions.

Whatever your welding job, you'll find it pays to put your confidence in Arcos. Backed by long experience with fabricators' welding problems, and research in the behavior of various grades of electrodes in use and weld metal in service—you can trust Arcos Stainless Electrodes to deliver consistently dependable welding results. ARCOS CORPORATION • 1500 South 50th St., Philadelphia 43, Pa.

WELD WITH

ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes

The new Slotted-Type

"Place" Bolt

as made by "CLEVELAND"

(Licensed under U. S. Patent No. 2543705)

● Economical in cost and use, Place Bolts have broad application possibilities in tough vibration point assembly jobs. The new design with slotted head is cold forged out of carbon as well as alloy steels—a lower cost one-piece self-locking fastener having increased yield and fatigue strength.

This is the screw that locks itself by the diaphragm spring action of its head when tightened against a rigid seat—locks against all involuntary loosening influences including vibration, and insures against impact of shock failure. If you're not acquainted with this unique fastener, write for folder on "Cleveland" Place Bolts, and prices.

CLEVELAND *Top Quality* FASTENERS

THE CLEVELAND CAP SCREW COMPANY
2925 East 79th Street, Cleveland 4, Ohio

originators of the Kaufman DOUBLE EXTRUSION Process

Long Time Between Ticks

WORLD'S slowest clock will have one year between ticks. It's designed to run without winding for the coming century.

Clock was built by the Museum of Science and Industry at Chicago to be enclosed in a cornerstone with other samples of man's technical ingenuity. Purpose of the internment is to determine how certain materials withstand and react to long passage of time.

Made from plans drawn by George G. Ensign, research director, Elgin National Watch Co., the thermostatic clock movement consists of a bi-metallic strip, held stationary at one end. The other end will rise and fall as the temperature goes up and down.

Clock will register once each time the temperature falls to 20° after rising to 80°F. It will tick once each winter.

valves, are actuated by a single camshaft.

Sun Will Be Probed

Mechanical mounts for the two largest and most powerful instruments ever built to study the sun's corona are now undergoing tests at the Sunnyvale, Calif., plant of Westinghouse Electric Corp. The instruments are called coronagraphs.

After completion of dry runs on these instruments, using electronic devices to double for the missing giant lens and sun, special optical systems and instruments will be installed. The two coronagraphs will then probe the sun's secrets from high-altitude, dust-free and haze-free observatories atop Fremont Pass in the Colorado Rockies and on Sacramento Peak, near High Rolls, N. M. The first one completed will be located at Sacramento Peak and is scheduled to be in operation by this fall.

Tells Battery Know-How

Battery instruction sheet designed to help men responsible for alarm systems, railway signalling, telephone and other systems which use storage batteries on float has been issued by Gould-National Batteries Inc., Trenton, N. J.

Bulletin describes self-discharge

an answer to the shortage of 18-8

REZISTAL 430

strong · corrosion-resistant · readily available

Gutters and downspouts are only one of many applications where Crucible Rezistal 430 Stainless Steel offers an adequate substitute for the 18-8 types of Stainless.

Rezistal 430's chromium content assures its resistance to an impressive list of industrial and natural corrosive media. In many of these, its performance approaches that of 18-8. Rezistal 430 also does well under many conditions involving high temperature oxidation and scaling. And what is most important, you can fabricate it by all the standard methods.

We will be glad to send you more information on the corrosion-resisting and mechanical properties of Rezistal 430, or to advise you on its suitability for your particular application. Write us today.

CRUCIBLE first name in special purpose steels

52 years of Fine steelmaking

REZISTAL 430 STAINLESS STEEL

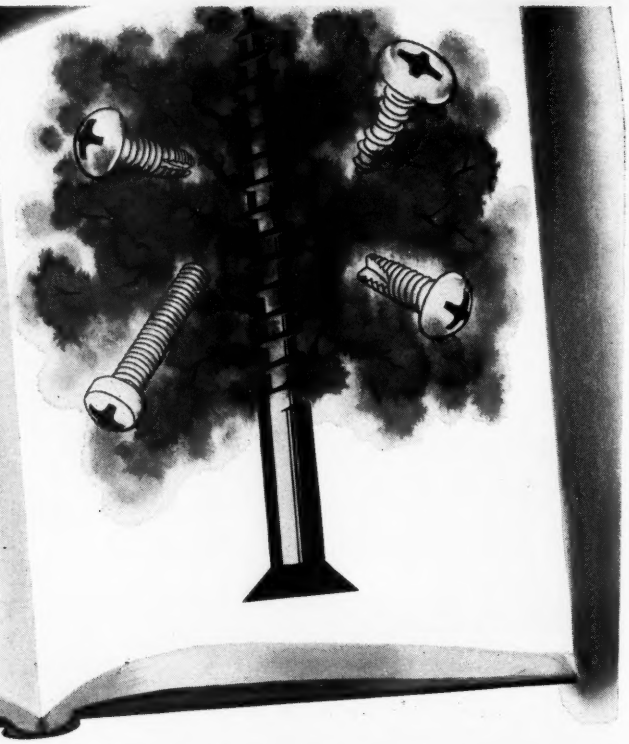
CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES. OLIVER BUILDING, PITTSBURGH, PA.

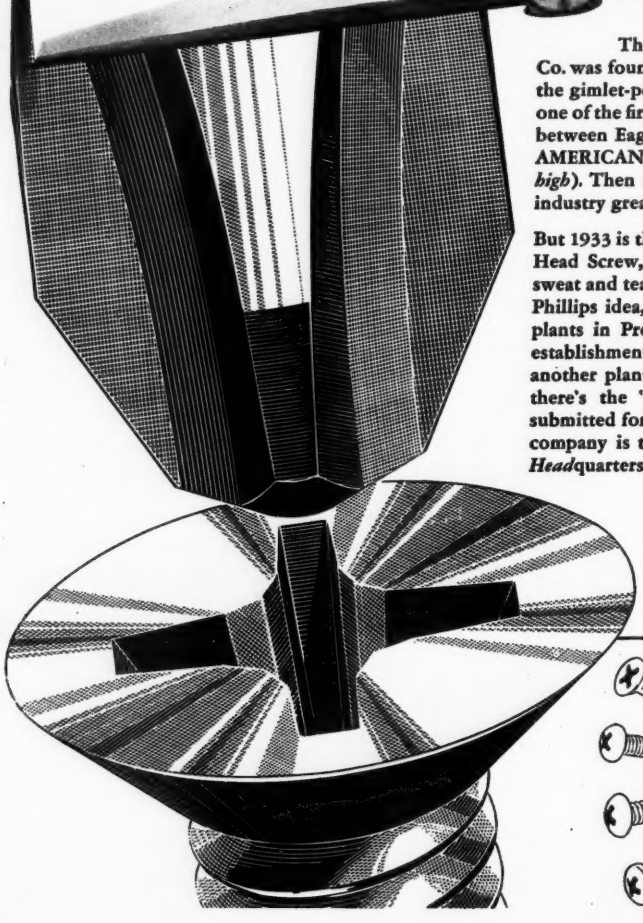
STAINLESS • REX HIGH SPEED • TOOL • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

THE AMERICAN STORY

CHAPTER I:

"Family Tree"





Thread of this story begins in 1838, when the Eagle Screw Co. was founded in Providence. Next major event was in 1850, when the gimlet-pointed wood screw was given to industry. Next, in 1860 one of the first significant mergers in American industry was arranged between Eagle Screw and New England Screw Co. The new name: AMERICAN SCREW COMPANY (*and the eagle trademark still flies high*). Then in 1876 came the invention of the *rolled thread,* giving industry greater production at lower cost.

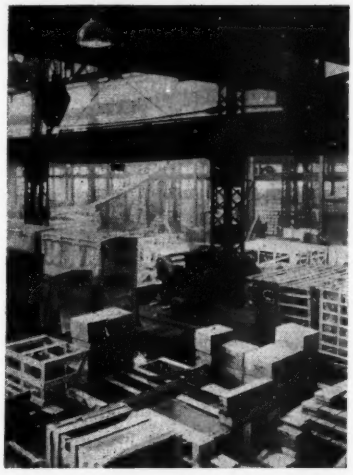
But 1933 is the red-letter date—the birthdate of the Phillips Recessed Head Screw, pioneered by American after several years of "blood, sweat and tears". And in succeeding years, with the acceptance of the Phillips idea, American Screw Co. outgrew its several old-fashioned plants in Providence—and in 1950 moved to its present 87-acre establishment in Willimantic, Conn., which is supplemented by another plant in Norristown, Pa., and a warehouse in Chicago. So there's the "time-capsule" history of American Screw Company, submitted for the record as interesting evidence of how and why the company is today Fastening Headquarters — and especially, *Phillips Head*quarters — for the industry of America and the world at large.

AMERICAN SCREW COMPANY

PHILLIPS HEADquarters

WILLIMANTIC, CONNECTICUT

Main Office & Plant
Willimantic, Conn.
Office & Plant, Norristown, Pa.
Office & Warehouse, Chicago, Ill.



More Space for Storage

Completion of a major development program in the warehouse building of Reserve Terminals Co., Cleveland, makes available 112,000 cu ft of additional storage space. Seven bays are serviced by 11 overhead traveling cranes. Concrete flooring has unlimited load capacity for heavy unit stores

of standard, Flote' and Plante' batteries that float on lines from direct current generator or rectifiers to supply peak power and to take over the full load during power failures.

Picture of Tinplate

Marvels of high-speed, quality production and engineering genius that turn out miles of tin plate every day are portrayed and described in a booklet by Wheeling Steel Corp., Wheeling, W. Va.

Mainly pictorial, the 16-page booklet shows what goes on inside Wheeling's Yorkville, O., works. It highlights the recent step in tin plate technology — the advent of electrolytic tin plate.

New Data on Titanium

New applications of titanium tubing and the important advances of this year's metallurgical research on fine small tubing will be featured in Superior Tube Co.'s display at the Philadelphia National Metal Exposition, Oct. 20-24.

Titanium tubing, the company says, has been used right along experimentally for condenser tubes operating in salt water and in chemical plant equipment. Its unusual resistance to wet chlorine gas suggests many possible new manufacturing uses. Experimentation is still under way at several of the duPont plants to evaluate performance and commercial potentials of this new metal in speciality tubing.

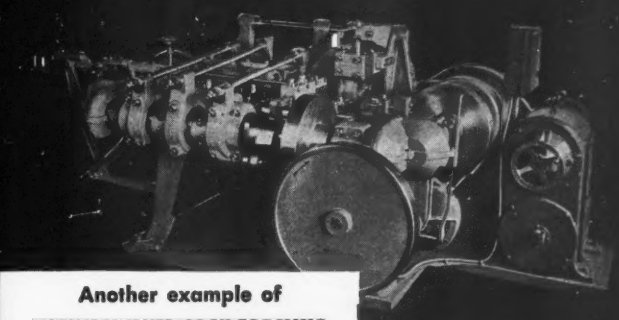
In addition to the display of titanium tubing, Superior experts will be on hand at the exposition to explain and dramatize the use of numberless analyses of special alloys in round and shaped tubing.

Checks Limit Loads

Limit load gage developed at National Bureau of Standards provides a simple means for determining whether basic structural components of operational aircraft have been stressed beyond safe limits.

Service tests of the gage on high-speed fighter aircraft have proved its value as a safety device and provided sufficient data to suggest that it may find use on other types of aircraft. Potential use of

PRODUCTION RECORDS *Broken*
with NILSON 4-SLIDE *Machine!*



Another example of
FASTER, LOWER COST FORMING
of Ribbon Metal Stock

★ *180 Terminal Contacts* Per Minute

★ *7 Separate Operations* Eliminated

A famous national manufacturer tripled production of the Terminal Contact illustrated above (in actual size) and reduced production costs proportionately by replacing several progress die set-ups with one Nilson S-3-F four side machine. *Seven separate operations were eliminated;* 180 completed contacts produced per minute. Time required for tooling changes was reduced 50% over similar type machines.

This example clearly shows the big savings you can make in overhead, maintenance, labor and time with a Nilson 4-slide!

Taking stock directly from the coil, NILSON metal ribbon stock four-slide machines automatically feed, straighten, pierce, blank, swage, stamp, coin, cut off and perform up to five forming operations with speed and accuracy. Built in five models with capacities up to 2½" wide and feed lengths up to 15". For specific recommendations on your wire and ribbon metal forming problems, send details, prints or samples of your operation to us when you request the bulletin.

THERE'S NOTHING LIKE A NILSON

Specialists in Wire Forming Equipment for Over 50 Years

THE A. H. NILSON MACHINE COMPANY

1509-D RAILROAD AVENUE, BRIDGEPORT 5, CONNECTICUT

OTHER NILSON PRODUCTS:

- Automatic chain-making machines
- Automatic staple forming machines
- Wire and Stock reels
- Foot Presses
- Wire straightening equipment
- Slide Feeds for Presses

Saved 14 containers!

Saved 50% handling costs!

SIGNODE OFFERS YOU BETTER STRAPPING METHODS*

Even your "best" can be improved. A manufacturer of TV transformers formerly shipped 168 units in 15 cartons. Signode helped them work out a multi-unit package combining 175 units in *one*—bound into a compact pallet load with Signode steel strapping. This application was easy to work out but . . .

this one was a toughie!

Diesel springs, heavy and unwieldy, formerly were shipped loose in railway cars. At the point of assembly, each of eight component parts of the spring had to be handled separately. Signode, with the foundry men, worked out a new idea. Three pre-bundled spring assemblies were strapped onto an inexpensive pallet. When the springs reached the assembly line, the steel strapping was left on the individual spring bundles until they were mounted in place. This bundle method cut handling costs 50%!

we'll help you, too!

If you want to try palletizing for the first time, or improve your present method, we'll help you, too. To have a Signode man call, write

TESTED AND APPROVED

SIGNODE

Steel Strapping Company

2645 N. Western Ave., Chicago 47, Ill.

this seal means security in shipping

SIGNODE

Offices Coast to Coast.
In Canada: Canadian Steel Strapping Co., Ltd.
Foreign Subsidiaries and Distributors World Wide

such gages in determining overload on bridges and other heavy structures is a future possibility.

Blast Cleaning Pays Off

Heat treater adds commercial cleaning; absorbs the cost within three months

HOW a heat-treater moved from a have-not to a have position in commercial finishing and amortized its equipment within three months is the story told by Benedict-Miller Inc., Newark, N. J.

The firm is a steel company, equipped originally with a heat treat department. Customers' practice was to have heat treating done at

LIQUID BLAST CLEANING
. . . work comes from two directions

Benedict-Miller, then ship the parts on to another firm for finishing. To capture an obvious and ready market for this service, the necessary liquid blast cleaning machine was installed for removing scale from molds and dies.

From Two Directions—An immediate result was retention for finishing of most items brought in for heat treating. Secondary effect was expansion into a complete department set up for commercial finishing.

In this way, says the company, the work comes from two directions. On some items, heat treat business has doubled because of the convenience offered by the new service; in addition, other heat treaters in the position occupied

formerly by Benedict-Miller send in work for finishing.

Acid Pickling Out—Company officials say the equipment paid for itself in three months. Made by Pangborn Corp., Hagerstown, Md., the blast cleaner supplanted completely various acid pickling processes employed at times to remove scale. Blast action is regulated effectively by varying air pressure, size and hardness of abrasive and distance of gun from work. The company says its action can be made sufficiently gentle to prevent distortion in tolerances as fine as 0.0001-inch.

Inspection is done by micrometer before and after cleaning to assure adherence to tolerances.

Bigger Turbines Coming

DEVELOPMENT by General Electric Co. of a new alloy called Cond-Al has enabled the company to begin manufacture of steam turbine-generators said to be 35 per cent more powerful than any of their type now in existence.

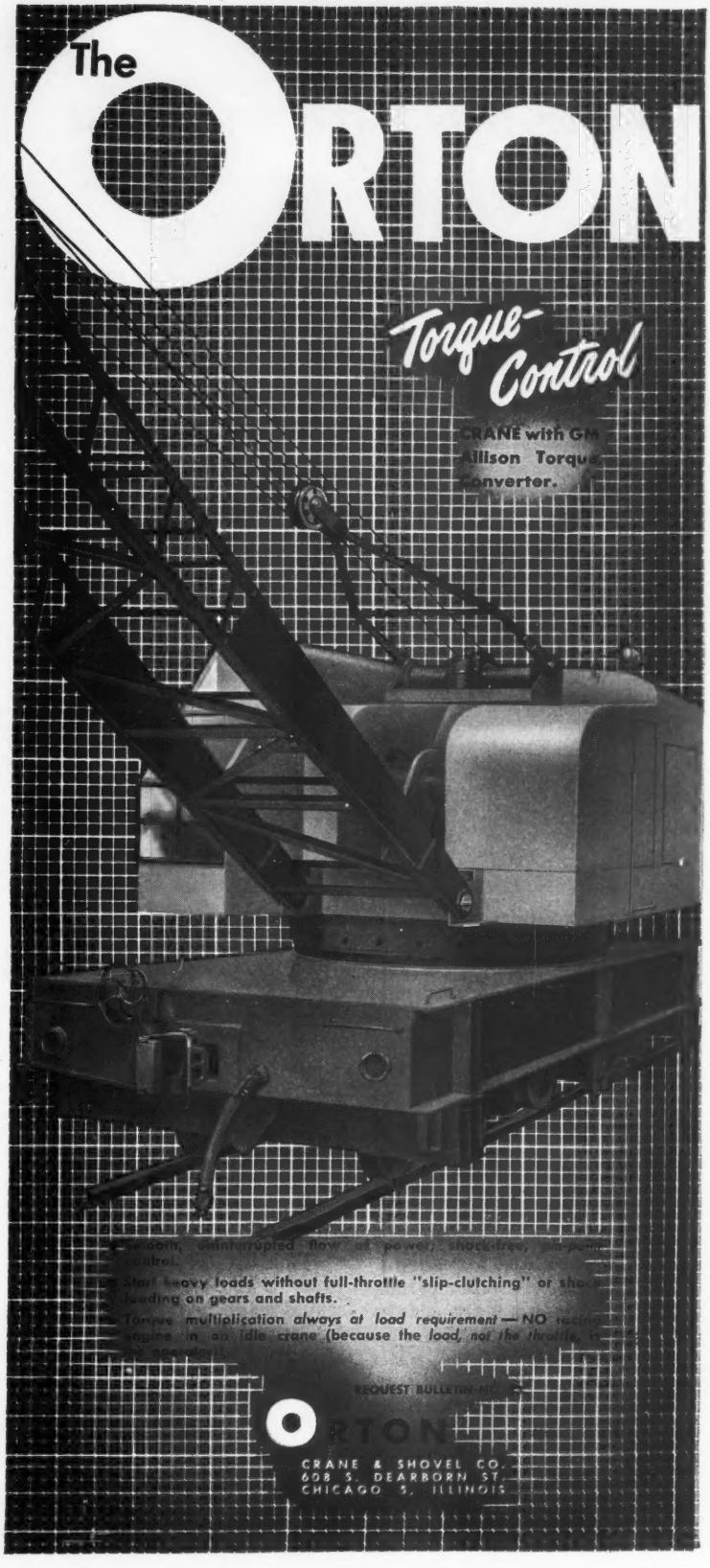
Announcing the successful outcome of eight years' research, Glenn B. Warren, general manager of G-E's Turbine Division, says the alloy is composed of aluminum, with very small quantities of iron, magnesium and silicon.

New Era—Invention of Cond-Al opens a new era in the evolution of the steam turbine-generator, predicts Mr. Warren. He explains that the alloy's light weight, high conductivity, and resistance to various stresses in high-speed, high-temperature operation remove a previous limitation on size of turbine generators.

Manufacture of the first four turbine-generators to use the new alloy is underway in the company's turbine plant. The first unit is scheduled for completion this fall. Each is rated at 216,000 kva and will operate at 3600 rpm.

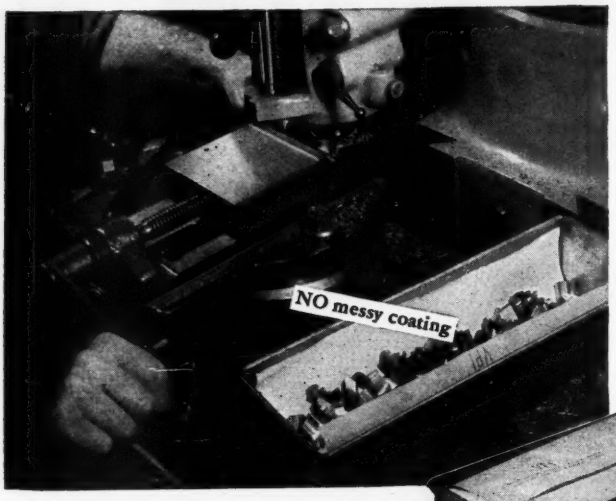
Shipping Problems—The 216,000 kva units, when assembled, will each weigh more than 700 tons and will be nearly 82 feet long, 17 feet wide and more than 10 feet above floor level.

Because of their size, the stator, or frame, of each will be too large for shipment as a unit. A method



Angier

Vapor from Paper Stops Rust



Now parts in-process are

stored clean to stay clean

PROBLEM: High humidity and acid fumes were causing rust to form while these shiny precision parts for sewing machines were being turned out. Protective dips would involve a lot of time and bulky equipment to "clean" the parts next day.

SOLUTION: By simply lining tote pans with Angier VPI wrap, the parts are *stored* clean . . . and they *stay* clean. They are bright and rust-free when removed from the pans — even if they are stored for months. All because VPI vapor permeates the area inside the pans to make moisture and factory atmosphere harmless to metal surfaces. No oil or grease coating is necessary. So "cleaning" time is saved.

WHAT IS YOUR PROBLEM . . . storage of parts in-process, storage for inventory . . . or *shipping* metal products? To get "VPI Facts", check below the products stored or shipped by you. Send today to the most experienced name in vapor rust preventives — Angier Corporation, Framingham 8, Mass.

☐ Machinery-Industrial, Metal Working, Farm, Office, Construction.
☐ Steel in process of fabrication.
☐ Electrical Machinery, Appliances, Products.
☐ Instruments and clocks.
☐ Fabricated Products—Cutlery, Hardware, etc.
☐ Ordnance Equipment.
☐ Transportation Equipment—Aircraft, Auto, Naval, Railroad, etc
☐ Others:

Angier VPI® Wrap

The PROVEN Vapor Rust Preventive

Distributors of Angier Industrial Papers in All Principal Cities

of double-frame construction has been developed for the new type of turbine-generators reports Mr. Warren.

Prominence for Rare Earths

New markets plus a greater availability are the omens for expanded industrial use

SIZABLE new markets for a relatively unused group of metals may develop in steelmaking, as well as in aviation, electronics and atomic energy.

Commonly known as the rare earths, the 14 metals in the group have been classified in the periodic table by the following tongue-twisting names: Cerium, promethium, praesodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium and lutecium. Four others, lanthanum, yttrium, scandium and thorium are frequently attached to the group because of their close relationship in the table, in some minerals and in some production properties.

Used Now—Present use of the rare earths, as in the making of sparking flints for cigarette lighters, has been largely confined to misch metal, a mixed form of the metals. As compounds with other elements, they are also used to produce light of sun-like brilliance in movie projectors and searchlights, for coloring, polishing and special optical effects in the glass industry and for making capacitors in the electronics industry.

Dr. Clyde Williams of Battelle Institute, Columbus, O., explains, "Recent discoveries of large domestic resources of these raw materials in several western states will support a great expansion in their use for years to come. They will not be produced in tonnage quantities comparable to such common metals as steel, copper and aluminum. They will, however, be used more to do special jobs better than some other material is now doing, or unable to do.

More to Work with—"Improved methods of recovery will provide scientists with greater quantities of the individual rare earths. This will make it possible for them to

Steel veins for iron horses

Steel veins for iron horses—strong, durable veins easily forged and fabricated to exact requirements—this is but one of the many applications for OSTUCO Tubing in products of modern design, products that strengthen America and the free world.

OSTUCO Tubing presents endless opportunities for improving design in almost every field. In addition to infinite adaptability, OSTUCO Tubing offers such advantages as maximum strength with minimum weight, good surface conditions for finishing, excellent machinability, and low cost. We cannot always promise early delivery estimates on new civilian orders, because of military demands, but it will pay you to consult our experienced engineers about OSTUCO Tubing when redesigning your products to meet future competition.

From Your Blueprint . . . to Your Product
OSTUCO TUBING
Tapering • Swaging • Flanging • Bending
Upsetting • Expanding • Reducing • Beading
End closing • Spinning • Drilling • Slotting
Notching • Flattening • Shaping • Trimming
Threading • Angle Cutting • And Many Others

THE OHIO SEAMLESS TUBE COMPANY

Manufacturers and Fabricators of Seamless and Electric Welded Steel Tubing

Plant and General Offices: SHELBY, OHIO

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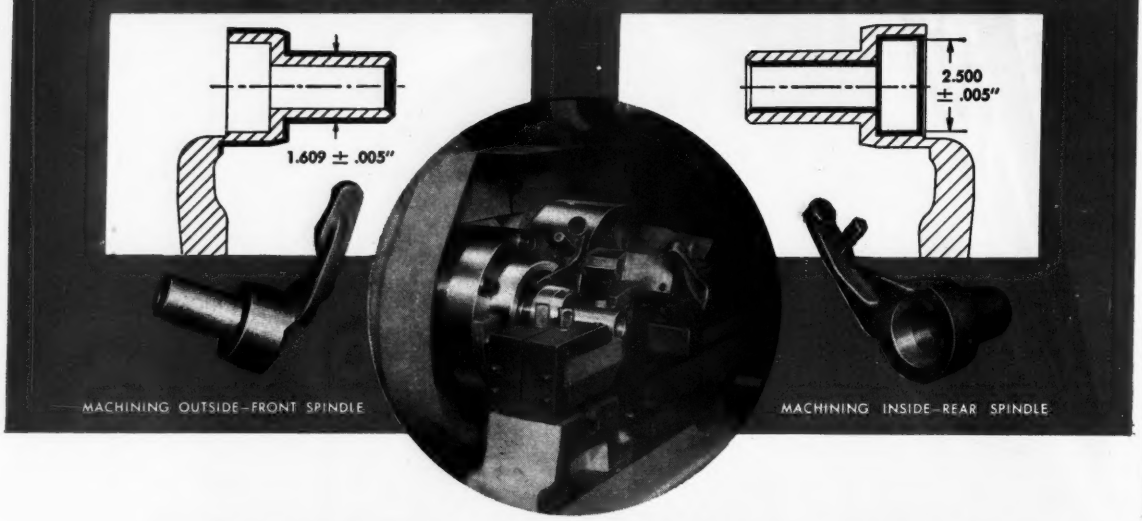
SALES OFFICES: Birmingham, P. O. Box 2021 • Chicago, Civic Opera Bldg., 20 N. Wacker Dr. Cleveland, 1328 Citizens Bldg. • Dayton, 511 Salem Ave. • Detroit, 520 W. Eight Mile Road, Ferndale • Houston, 6833 Avenue W, Central Park • Los Angeles, Suite 300-170 So. Beverly Drive, Beverly Hills • Moline, 617 15th St. • New York, 70 East 45th St. • Philadelphia, 1613 Packard Bldg., 15th & Chestnut • Pittsburgh, 1205 Pinewood Drive • St. Louis, 1230 North Main St. • Seattle, 3104 Smith Tower • Syracuse, 501 Roberts Ave. • Tulsa, 733 Kennedy Bldg. • Wichita, 622 E. Third St. • *Canadian Representative:* Railway & Power Corp., Ltd.

THIS FORGING IS *COMPLETELY* PRECISION-MACHINED IN *ONE* AUTOMATIC TURRET CYCLE

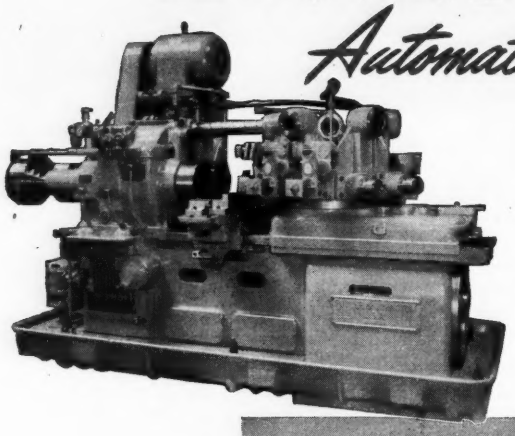


2 SPINDLES--ONE POWER SOURCE

PROVIDE INCREASED PRODUCTION AT LOWER COSTS

THE POTTER & JOHNSTON 5D-2

Automatic Turret Lathe



Designed to meet today's requirements for increased production of precision-machined work, the Potter & Johnston 5D-2-9" machine is equipped with a double spindle headstock and provides two tool stations on each turret face. It is now possible to perform an operation on two parts simultaneously, or an operation can be performed on one part while supplementary work is, at the same time, being done on a second. Output is far greater than the best obtainable from one single spindle unit. Initial cost, power consumption, floor space and operator attention are all much less than that required for *two* single spindle machines; production costs are lowered substantially.

Complete information about the 5D Automatic Turret Lathe including dimensions, specifications and design data will be sent on request. If desired, P&J tooling recommendations and time estimates based on your own sample parts or prints will gladly be furnished.

POTTER & JOHNSTON
COMPANY
PAWTUCKET, RHODE ISLAND

SUBSIDIARY OF PRATT & WHITNEY — P&J — DIVISION NILES • BEMENT • POND CO.

BRANCH OFFICES . . . BIRMINGHAM • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DALLAS (The Stance Co.) • DETROIT • HOUSTON (The Stance Co.) • LOS ANGELES • NEW YORK • PHILADELPHIA PITTSBURGH • ROCHESTER • SAN FRANCISCO • ST. LOUIS • EXPORT DEPT. WEST HARTFORD

study industrial applications more completely.

"Heretofore, only small quantities of the individual metals have been available because it has been extremely difficult to separate them into pure form. A frequent result of purification is to give an entirely new field of usefulness not realized from the impure metal of the past."

Biggest potential new market for the rare earths is in steelmaking. Here, as with some other primary metals such as aluminum and magnesium, small doses of these raw materials can improve the quality of end products.

Benefits — Dr. Williams says that, ". . . rare earths may, for example, improve resistance of the primary metal to oxidation and corrosion at high temperature, impart strength, cut down impurities or make the primary metal easier to work into desired shapes."

The Atomic Energy Commission will continue to play an important role in the development of the rare earths. The AEC has an interest in these raw materials because they occur as by-products of the atomic energy pile. Furthermore, the mineral thorium, usually found associated with them, is under study for atomic energy applications.

Amount Used — Total consumption of monazite sand, from which misch metal and the rare-earth compounds have been derived in the past, amounted to about three to four thousand tons in the U. S. in 1951.

Monazite sand the Battelle director says, has been customarily imported from India and Brazil. Curtailment of supply from these sources in recent years has been a major factor in spurring the discovery and development of rare-earth deposits in the United States.

Template for Flow Charts

Flow process template number 55 is announced by Rapidesign Inc., Glendale, Calif. It's designed primarily for industrial engineers, and uses symbols standardized by the American Standards Association for uses in process charts to depict the flow and handling of materials. Each symbol has six sizes and all are precision smooth. It's made of 0.030 plastic, matte finish, with the printing on the matte surface to minimize wear.

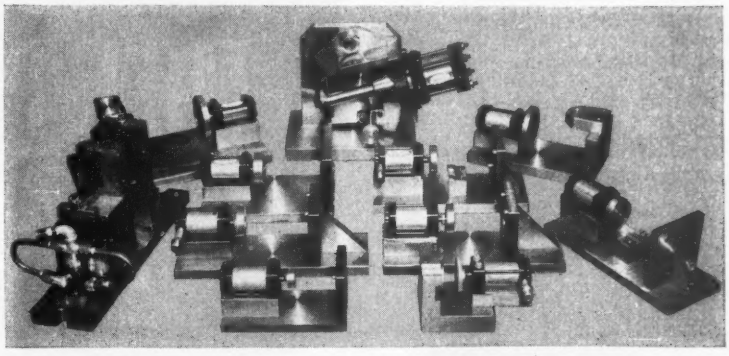
Lift Uses Gas or Diesel Power

As a phase of its recently-concluded design standardization program, Yale & Towne Mfg. Co., Philadelphia, is making 4000 to 10,000-pound capacity fork lift trucks available with either gas or diesel power plants. The company predicts ability to install either type power plant in the same size chassis should increase flexibility in application of fork lifts. This is particularly the case where operating conditions and available fuel indicate a definite preference for one type or the other.

Aircraft Spec List

Society of Automotive Engineers Inc., announces a new price schedule and aeronautical material specification list. List is revised as of June 15 and contains 9 new and 60 revised specifications.

INEXPENSIVE AIR CLAMPS REDUCE FIXTURE LOADING—UNLOADING TIME



A machine tool makes money only when it's cutting metal. Every second it stands idle while a fixture is being loaded or unloaded cuts into the profit picture.

Romec Pump Division, of Lear, Inc. has increased production 265% to 500% in more than 75 machining operations by using Bellows Han-d-Air cylinders to open and close fixtures and other workholding devices.

This midget air cylinder develops 100 lbs. of pressure at 100 lbs. of air. Its 1" stroke is ample for most clamping operations. Its overall size 4" x 1½" square, saves space. A threaded 5/16" piston rod simplifies installation.

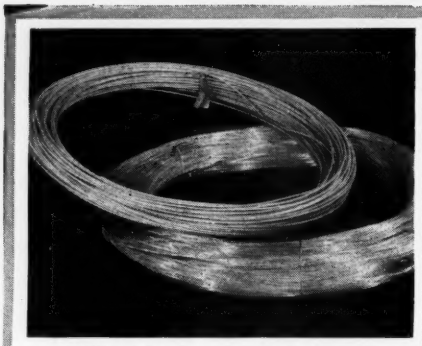
The Han-d-Air can be mounted in any position, and is even equipped with provision for pivot mounting. Its cost is so low (only $6.00 each or $66.00 per dozen) it is less expensive to leave it permanently on the fixture than to switch it from one fixture to another.

605A

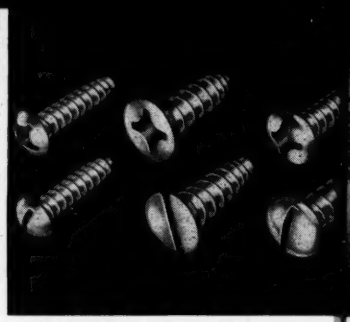
ORDER . . . . A TRIAL DOZEN . . . . TODAY

Write Dep't ST-952, The Bellows Co., Akron 9, Ohio

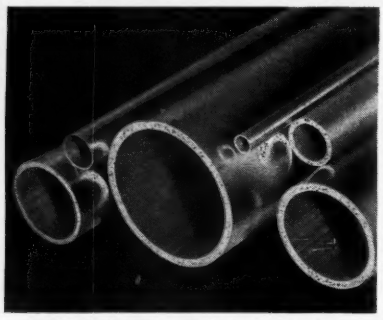
The Bellows Co.
AKRON, OHIO



WIRE—Coiled and straight lengths; rivet wire; flattened and slit wire.

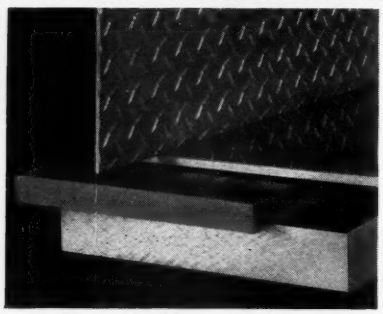


FASTENERS—Machine screws, wo screws, washers, nuts, bolts, rivets.

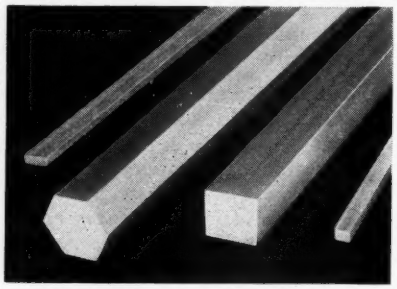


TUBE AND PIPE—Coiled tube; straight tube in round, square and rectangular shapes; heat exchanger tubes; standard pipe and pipe fittings; irrigation pipe; rigid conduit.

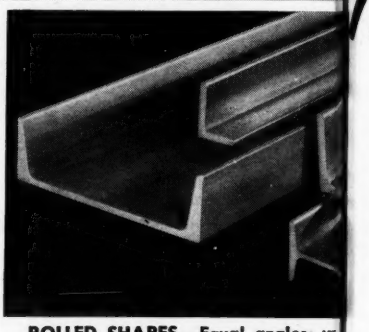
These are the MILL PRODUCTS *of* ALCOA



SHEET AND PLATE—Flat and coiled sheet; circles; patterned sheet; tread plate; roofing and siding sheet; roofing accessories and fasteners; specialty sheet.



BAR STOCK—Square, hexagonal and rectangular bar stock in free-cutting and higher-strength alloys.



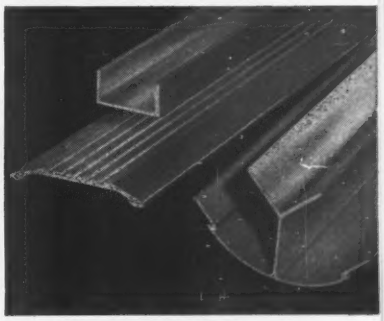
ROLLED SHAPES—Equal angles; u equal angles; channels; I-beam H-beams; Tees; Zees.

"SEE IT NOW" with Edward R. Murrow — CBS-TV every Sunday . . . brings the world to your armchair. Consult your newspaper for local time and channel.

ALUMINUM COMPANY OF AMERICA

SCREW MACHINE STOCK—All free-cutting alloys plus the higher-strength alloys—24S, 61S and 75S.

WELDING AND SOLDERING SUPPLIES—Welding and brazing wire, welding and brazing flux, solder flux, solder.



EXTRUDED SHAPES—Miscellaneous extruded shapes such as angles, channels, half rounds, quarter rounds, thresholds, truck corners, structural members, etc. Round, square and rectangular bars.

They have these 12 basic advantages and scores of others

- Lightweight
- High Resistance to Corrosion
- High Electrical Conductivity
- High Conductivity for Heat
- High Reflectivity for Light and Radiant Heat
- Workability
- Nontoxic
- Strength in Alloys
- Nonsparking
- Nonmagnetic
- Appearance
- High Scrap and Re-Use Value

With them goes the skill of 64 years' experience in fabricating, assembling and finishing aluminum

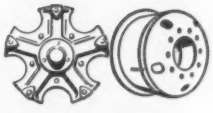
The world's greatest aluminum research and testing facilities are available to help you determine the suitability of aluminum for your products. And to train your personnel, Alcoa offers technical literature and how-to-do-it movies.

They are available from your local ALCOA sales office, distributor or jobber

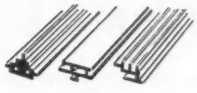
For all possible co-operation in filling your orders, call your local Alcoa sales office, distributor or jobber. You'll find them listed under "Aluminum" in your classified phone book.

ALCOA ALSO MAKES PRODUCTS TO CUSTOMER SPECIFICATION

CASTINGS
sand, plaster, permanent mold and die



FORGINGS
drop, hammer and press forgings



EXTRUDED SHAPES

IMPACT EXTRUSIONS

SCREW MACHINE SPECIALTIES
special fasteners and screw machine parts

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Towmotor makes one man ten times better when it comes to handling heavy loads at top-production speed. Output soars and handling costs sink accordingly... gains that fast cancel Towmotor's modest first cost. From then on it's a steady pay-off because there's real staying power built into Towmotor Mass Handling Equipment. "Man Hour Thieves" tells the whole timely story. Write for your copy and name of your nearest Towmotor Representative to: Towmotor Corporation, Div. 16, 1226 E. 152nd St., Cleveland 10, Ohio.

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FORK LIFT TRUCKS and TRACTORS
SINCE 1919
RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

CALENDAR
OF MEETINGS

September 16-17, Industrial Truck Association: Fall meeting, Hotel Cleveland, Cleveland. Association address: 900 F St. NW, Washington 4. Secretary: W. Van C. Brandt.

September 17-19, National Foundry Association: Annual meeting, Edgewater Beach Hotel, Chicago. Association address: 53 W. Jackson Blvd., Chicago 4. Executive secretary: E. J. Walsh.

September 18, Material Handling Institute: Hotel Cleveland, Cleveland. Institute address: 731-732 DuPont Circle Bldg., Washington 6. Managing director: R. Kennedy Hanson.

September 19, The Wire Association, Nonferrous Division: First regional meeting, Elton Hotel, Waterbury, Conn. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

September 19-20, Automotive Engine Rebuilders Association: Midyear meeting, board of directors, Edgewater Beach Hotel, Chicago. Association address: 419 N. Capitol Ave., Indianapolis. Executive vice president: R. G. Patterson.

September 22-23, American Coke & Coal Chemicals Institute: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: 711 14th St. NW, Washington 5. Executive secretary: Samuel Weiss.

September 22-23, Steel Founders' Society of America: Fall meeting, The Homestead, Hot Springs, Va. Society address: 920 Midland Bldg., Cleveland 15. Secretary: F. Kermit Donaldson.

September 22-24, National Truck Body Manufacturers Association: Annual meeting, Muehlebach Hotel, Kansas City, Mo. Association address: DuPont Circle Bldg., Washington. Secretary, Shipley D. Burton.

September 22-25, American Mining Congress: Metal & nonmetallic mineral mining conference, Denver. Congress address: 1102 Ring Bldg., Washington 6. Secretary: Julian Conover.

September 24-26, American Hot Dip Galvanizers Association Inc.: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 1506 First National Bank Bldg., Pittsburgh. Secretary: Stuart J. Swennson.

September 28-October 2, National Screw Machine Products Association: Fall membership meeting, The Broadmoor, Colorado Springs, Colo. Association address: 2860 E. 130th St., Cleveland 20.

September 29-30, American Machine Tool Distributors Association: Annual meeting, The Cavalier, Virginia Beach, Va. Association address: 1900 Arch St., Philadelphia 3. Executive secretary: Thos. A. Fernley.

September 29-Oct. 2, American Institute of Steel Construction Inc.: Annual convention, Empress Hotel, Victoria, B. C. Institute address: 101 Park Ave., New York 17. Executive vice president: L. Abbett Post.

September 30-Oct. 3, Association of Iron & Steel Engineers: Fall meeting and exhibit, Hotel Statler and Public Auditorium, Cleveland. Association address: 1010 Empire Bldg., Pittsburgh 22. Director: T. J. Ess.

OCTOBER

October 3-4, American Institute of Mining & Metallurgical Engineers, National Open Hearth Steel Committee: Fall meeting, Southern Ohio Section, Deshler-Wallick Hotel, Columbus, O.

October 3-5, Society of Industrial Designers: Annual meeting, Shawnee Inn, Shawnee-on-Delaware, Pa. Society address: 48 E. 49th St., New York 17. Secretary: Sally G. Swing.

October 6-7, Rail Steel Bar Association: Fall meeting, Hotel Cleveland, Cleveland. Association address: 38 S. Dearborn St., Chicago. Secretary: W. H. Jacobs.

October 6-10, National Hardware Show: Grand Central Palace, Atlantic City, N. J. Managing director: Frank Yeager.

October 9, American Iron & Steel Institute: Regional technical meeting, William Penn Hotel, Pittsburgh. Institute address: 350

a compact, complete small mill. No cellars or elaborate foundations needed

TO meet the need of many manufacturers for a small, compact, inexpensive mill for the cold rolling of narrow, thin strip, UNITED developed, and is now offering, a NEW, COMPLETELY INTEGRATED "PACKAGE MILL."

Each unit is furnished fully equipped with roller bearing mounted rolls, recirculating rolling coolant system, mill guides, tension reels, belt wrappers if desired, strippers, motors and drives, all mounted on a fabricated base which serves also as a rolling coolant reservoir. The mill illustrated is a reversing type with motorized screwdown.

If a small, compact, completely self-contained "Package Mill" of this type fits into your present operations or contemplated expansion, consult us. Your inquiry will bring complete information at no obligation.

- **Mill can be equipped for one way rolling by using a simple coil box instead of a reel.**
- **Sleeve type or collapsing mandrels are optional with or without grippers to meet user's requirements.**
- **Hand screwdown can be furnished instead of motorized screwdown as shown.**

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FEDERAL Mogul *SINCE 1899*

Fifth Ave., New York 1. Meeting director: Frank Ragland.

October 11-14, National Association of Waste Material Dealers Inc.: Fall meeting, Los Angeles. Association address: 271 Madison Ave., New York. Secretary: Clinton M. White.

October 13-17, American Institute of Electrical Engineers: Fall general meeting, New Orleans, La. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

October 16-17, Gray Iron Founders' Society Inc.: Annual meeting, Hotel Cleveland, Cleveland. Society address: 210 National City-E. 6th St. Bldg., Cleveland. Secretary: Donald H. Workman.

October 16-18, Foundry Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.

October 18-19, American Society for Metals: Annual seminar, Benjamin Franklin Hotel, Philadelphia. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

October 19-21, Conveyor Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: No. 1 Thomas Circle, Washington 5. Executive vice president: R. C. Sollenberger.

October 20-22, Packaging Institute: Annual meeting, Hotel Commodore, New York. Institute address: 342 Madison Ave., New York 17. Secretary: L. V. Burton.

October 20-24, American Society for Metals: Annual meeting, Benjamin Franklin Hotel, Philadelphia. Society address: 7301 Euclid Ave., Cleveland 3. Secretary: W. H. Eisenman.

October 20-24, American Welding Society: Annual meeting, Bellevue Stratford Hotel, Philadelphia. Society address: 33 W. 39th St., New York 18. Secretary: J. G. Magrath.

October 20-24, Society for Non-Destructive Testing Inc.: Annual meeting, Philadelphia. Society address: Box 710, Evanston, Ill. Secretary: Philip B. Johnson.

October 20-24, American Institute of Mining & Metallurgical Engineers: Fall technical session, Philadelphia. Institute address: 29 W. 39th St., New York 18. Secretary: Edward H. Robie.

October 20-24, National Metal Congress & Exposition: Convention Hall, Philadelphia. Secretary: W. H. Eisenman, 7301 Euclid Ave., Cleveland 3.

October 20-24, National Safety Council: National Safety Congress & Exposition, Conrad Hilton Hotel, Chicago. Council address: 425 N. Michigan Ave., Chicago 11.

October 22-24, Porcelain Enamel Institute: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: DuPont Circle Bldg., Washington 6. Secretary: John C. Oliver.

October 22-24, Society of Automotive Engineers: National transportation meeting. William Penn Hotel, Pittsburgh. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

October 27-29, National Lubricating Grease Institute: Annual meeting, Edgewater Beach Hotel, Chicago. Institute address: 4638 J. C. Nichols Parkway, Kansas City 2, Mo. Executive secretary: Harry F. Bennetts.

October 27-29, American Gear Manufacturers Association: Fall meeting, Edgewater Beach Hotel, Chicago. Association address: 302 Empire Bldg., Pittsburgh 22, Executive secretary: John C. Sears.

October 27-30, American Gas Association: Annual meeting and exposition, Municipal Auditorium, Atlantic City, N. J. Association address: 420 Lexington Ave., New York 17. Secretary & convention manager: Kurwin R. Boyes.

October 27-31, Electrochemical Society Inc.: Fall meeting, Mt Royal Hotel, Montreal. Society address: 235 W. 102nd St., New York 25. Secretary: Dr. Henry B. Linford.

October 30-November 2, National Tool & Die Manufacturers Association: Annual meeting, Hotel Sheraton, Rochester, N. Y. Association address: 906 Public Square Bldg., Cleveland. Executive secretary: George S. Eaton.

NOVEMBER

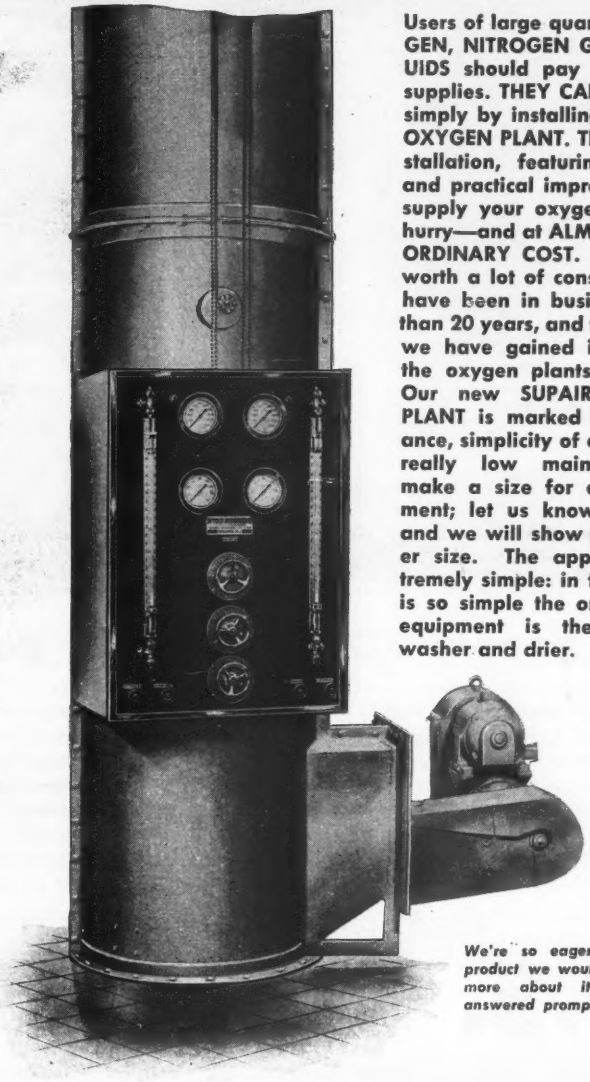
November 3-4, Society of Automotive Engineers: National diesel meeting, Hotel Chase, St. Louis. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

SUPAIRCO

Oxygen

FROM AIR

MORE, QUICKER, For LESS



Users of large quantities of OXYGEN, NITROGEN GASES OR LIQUIDS should pay LESS for their supplies. THEY CAN DO IT, TOO, simply by installing a SUPAIRCO OXYGEN PLANT. This modern installation, featuring some new and practical improvements, will supply your oxygen needs in a hurry—and at ALMOST HALF THE ORDINARY COST. That is a fact worth a lot of consideration. We have been in business for more than 20 years, and the experience we have gained is reflected in the oxygen plants we produce. Our new SUPAIRCO OXYGEN PLANT is marked by its endurance, simplicity of operation, and really low maintenance. We make a size for every requirement; let us know your needs, and we will show you the proper size. The apparatus is extremely simple: in fact, the plant is so simple the only additional equipment is the compressor, washer and drier.

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UNITED STATES STEEL

New Products and Equipment

Diecaster Holds Pressure

USE REPLY CARD—CIRCLE No. 1

Heavy duty Wedgelock cold chamber die casting machine develops and holds 40,000-pound pressures without opening die faces and flashing. Dies with 7½-inch deep cavities can be run with an opening up to 15 inches maximum. A shallow cavity can be run at a 10-inch opening for faster cycling and increased output. The die opening can be set at any point from 10 to 15 inches.

Motorized central screw adjustment regulating the die height eliminates toggle links. Direct locking prolongs die life. Castings are solid and nonporous, because the pump delivering oil to the shot cylinder has an adjustable relief valve permitting adjustments from 1000 to 2000 psi, and also because powerful hydraulic cylinders insure positive locking.

Central hydraulic ejector cylinder obviates manual rack-and-pinion ejection. Manufacturer is Cuyahoga Industries, 17920 Waterloo Rd., Cleveland 19, O.

Bridge Balance Announced

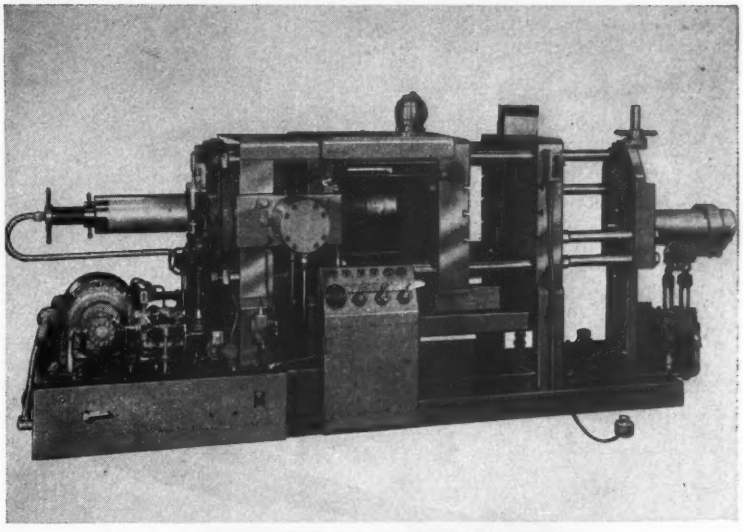
USE REPLY CARD—CIRCLE No. 2

Addition to a family of recording measurement instruments is the type 8-108, eight-channel bridge balance. Instrument may be used for direct recording of the output of a wide variety of strain gages and strain-gage type pickups without the use of amplifiers.

Used with a recording oscillograph it offers a complete recording measurement system. Up to eight 120 to 350-ohm strain-gage bridges or pickups, comprising four active arms, may be connected to the instrument. Voltage across each bridge can be adjusted individually and continuously from the level of the supply voltage—28.5 volts dc maximum—down to a minimum of 2.0 volts on a 350-ohm, four-arm bridge and 1.1 volts on a 120-ohm, four-arm bridge. Unit is made by Consolidated Engineering Corp., 300 N. Sierra Madre Villa, Pasadena 8, Calif.

REPLY CARDS

on page 169 will bring you more information on any new products and equipment in this section.



DIECASTER TURNS OUT NONPOROUS CASTINGS
. . . holds 40,000-pound pressures without opening die faces

Carbide Inserts Are Rigid

USE REPLY CARD—CIRCLE No. 3

Carbide-tipped milling cutter has been developed by Millet Division, Kraus Design Inc., 45 Flint St., Rochester 8, N. Y. It combines advantages of the solid and the inserted blade types.

Interchangeable blades are seated on periphery of cutter body with tail end seated against an abutment in the body. Cutting forces are transmitted to the body through this abutment. Heat treated body bound screws accurately locate the blades against the body abutment through a conical seat.

Versatile bodies can be bladed for straight slotting, alternate blade slotting or half side milling. Changes in rake and shear angles required for cutting various materials are accomplished by a quick change of the rapid mounting blades. Standard sizes now available in plain and side milling cutters are in widths of ½ and ¾-inch ranging in diameter from 3 to 8 inches.

Gives Press Force

USE REPLY CARD—CIRCLE No. 4

You can read directly the actual pressure in pounds of ram on work in presses with a tester made by Studebaker Machine Co., Maywood, Ill.

Self-contained hydraulic unit is accurately calibrated. It is made in three sizes—0.0 to 10,000 pounds, 0.0 to 50,000 pounds and 0.0 to 100,000 pounds. Pressures over 100,000 pounds are available on special order.

Whirlpool Cleaning

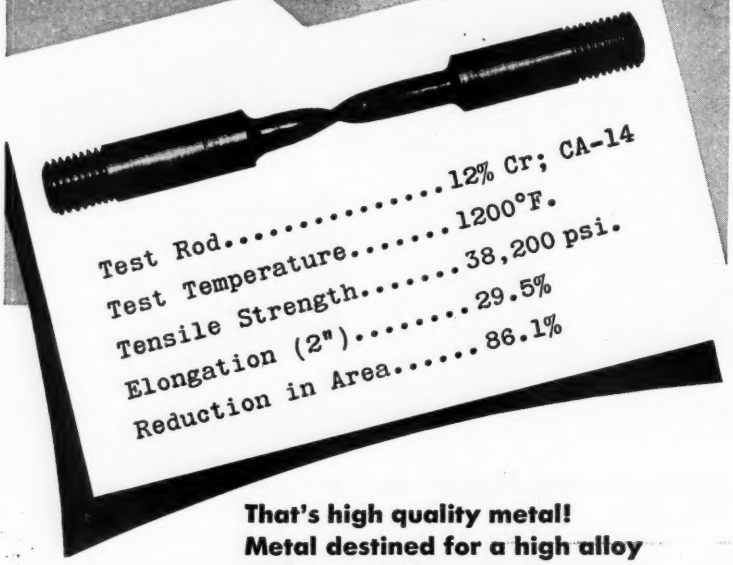
USE REPLY CARD—CIRCLE No. 5

Whirlpool-like agitation of cold cleaning solvents loosens and removes dirt, oil, grease and chips from parts placed in the Whirl Agitor cleaning units. Manufacturer is Graymills Corp., 3705 Lincoln Ave., Chicago 13, Ill.

Parts are placed inside the heavy gage steel tank, in a basket or heavy steel rack. Solvent is swirled in a vortex. An electric motor drives the v-belt and large-vaned impeller for the turbulent action. Grease-sealed dual ball bearings

The Story of a Test

DURALOY



That's high quality metal! Metal destined for a high alloy casting which has to meet some pretty rigid specifications!

The story we want to tell here is about our Testing Facilities. We have right in our foundry every conceivable testing facility needed when checking static or centrifugal high alloy castings for industry. Where required, we make complete chemical, metallurgical, and mechanical checks and tests. And have both a 400,000 volt X-ray unit and gamma-ray unit, for checking the final casting for hidden flaws.

As we see it, the only way to assure customers of high quality castings is to have and use all necessary facilities for testing and checking the heat, pour and finished casting.

THE DURALOY COMPANY

Office and Plant: Scottdale, Pa. • Eastern Office: 12 East 41st Street, New York 17, N.Y.

Detroit Office: 23906 Woodward Avenue • Pleasant Ridge, Mich.

Atlanta: J. M. TULL Metal & Supply Co. Chicago: F. O. NELSON 332 S. Michigan Avenue San Francisco: JOHN D. FENSTERMACHER 1241 Taylor Street

METAL GOODS CORP. Dallas • Denver • Houston • Kansas City • New Orleans • St. Louis • Tulsa

keep the impeller correctly aligned. Bearings are located below the tank bottom, sealed off from any solvent.

Eight models are listed ranging in capacity from 5 to 330 gallons.

Conveyor Makes Stacking Easy

USE REPLY CARD—CIRCLE No. 6

Here's a portable power belt conveyor that stacks materials where you want them anywhere in the plant. It can be used for storage stacking, as a booster in gravity conveyor lines, or for moving materials up average stairways.

Developed by Speedways Conveyors Inc., 1195 Niagara St., Buffalo, N. Y., the semipneumatic-tired unit will lift loads at any angle up to 30 degrees. Light in weight, the 10-foot unit, called the

. . . lifts loads at any angle to 30 degrees

Speedlift Jr., can be wheeled about easily by means of convenient handles. Its rough top, 12-inch wide, 3-ply duck belt enables it to handle many types of materials. It also is electrically reversible.

Welding Analyzer Improved

USE REPLY CARD—CIRCLE No. 7

New direct writing welding analyzer records single and three-phase resistance welding machine variables. Welding current and electrode force are measured and recorded simultaneously, and show the important squeeze, weld, hold, and off time intervals.

Unit also records the small 180 cycle per second component present in the three-phase welding machine current when ignitron rectifiers are used.

Machine is model BL-213, made

HOUGHTON

RUST-VETO 377

... the answer to most of your indoor rust prevention problems

LOOK!

All these advantages are combined in ONE multi-purpose rust preventive!

- ✓ **HIGH POLAR ATTRACTION** — *making it cling to metals*
- ✓ **WATER DISPLACING ABILITY** — *removes moisture from metal surfaces*
- ✓ **RESISTS OXIDATION** — *keeps protective film intact*
- ✓ **WON'T STAIN** — *used effectively on all metals*
- ✓ **SPRAYABLE** — *can be sprayed at 40° F.*
- ✓ **THIN FILM** — *(average .0003")—practically colorless*
- ✓ **LOW COST COVERAGE** — *over 1300 sq. ft. per gallon*

We believe no other rust preventive possesses all of the properties combined in Rust Veto 377.

This modern, thin-film polar type preventive withstands severe humidity tests and is a "natural" for indoor uses. It passes rigid salt spray protection tests. It deposits a thin, tough film which clings to parts but is easily removable.

For indoor storage you can't do better than to use Rust Veto 377. Get latest bulletin from your Houghton Man or write to E. F. Houghton & Co., Phila. 33, Pa.

RUST VETO 377 *

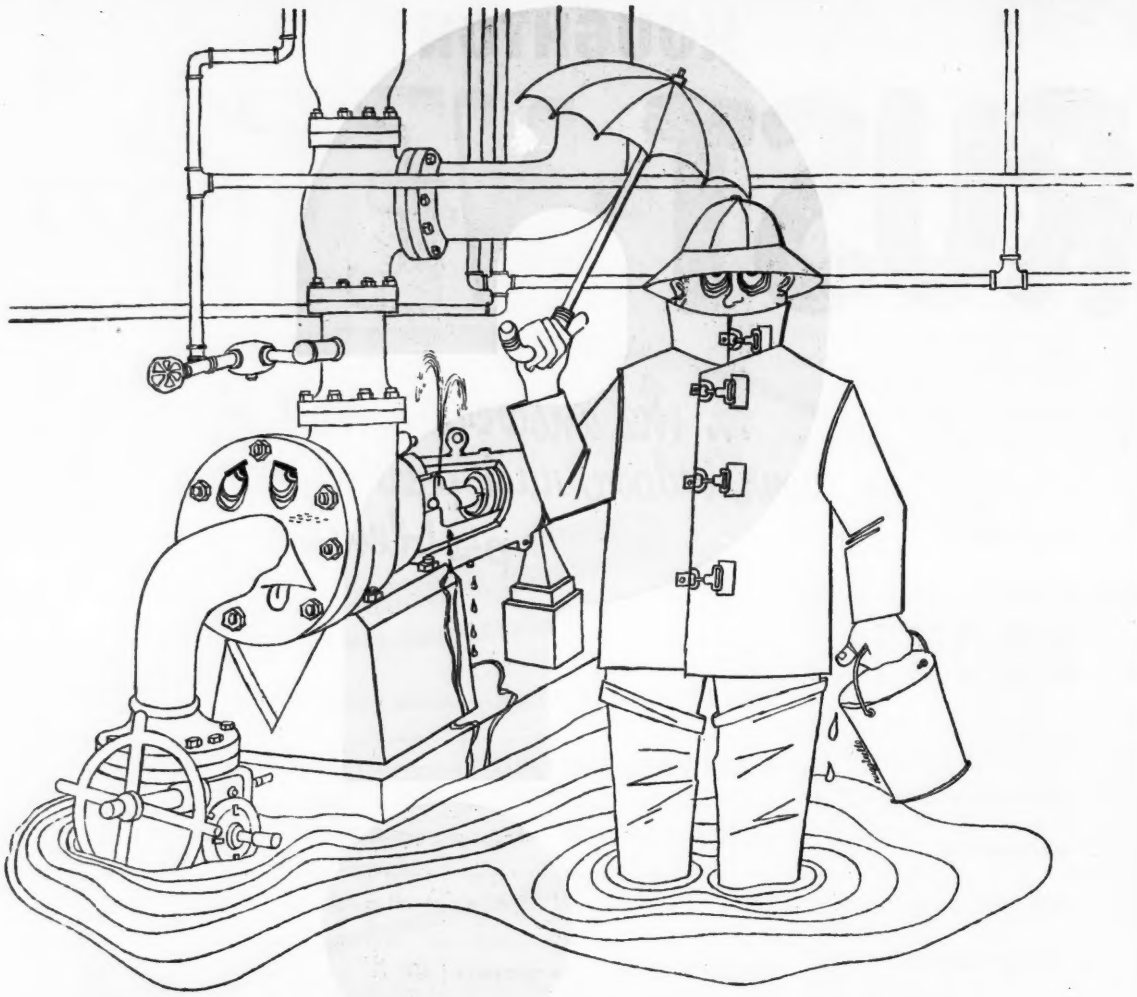
... a product of

E. F. HOUGHTON & CO.

PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO

Ready to give you on-the-job service ...

* If a government specification product for Type P-3 preservative (AXS-1759 Gr. 2) is required, order *Cosmoline 377.*



*Who needs a mechanical seal?**

If you've got hip boots, a bucket and a standby maintenance crew with nothing to do, why bother with a BJ Mechanical Seal? Take a devil-may-care, every-pump-for-itself attitude and let the packing fall where it may. Or if your maintenance department enjoys a "Quick-save-the-dikes" sort of life, they will have great fun poking in packing before the stuff completely goes.

BUT . . . if your business allows little room for exciting crises and repacking picnics, you should know about the BJ Mechanical Seal. This excellent, precision-made seal – available in a number of engineered types – takes the trouble right out of any stuffingbox. There's no leakage . . . no waste . . . no contamination of pumped liquid . . . no volatile liquid hazard . . . no profit-robbing repacking and delivery-delaying downtime.

Maybe *you* need a BJ Mechanical Seal for your BJ Pump. Ask your local Byron Jackson office for details or write:

Byron Jackson Co.
Since 1872
P. O. Box 2017, Terminal Annex, Los Angeles 54, California
OFFICES IN PRINCIPAL CITIES

**BJ Mechanical Seals are made exclusively for BJ Pumps.*

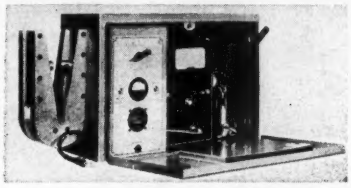
SEE BJ FOR THE ENGINEERED ANSWER TO YOUR PUMPING PROBLEMS

by the Brush Development Co., 3405 Perkins Ave., Cleveland 14, O.

Surface Resistance Determined

USE REPLY CARD—CIRCLE No. 8

Surface electrical resistance, as a criterion of the effectiveness of a cleaning process, is measured directly in microhms by a device reported by Weltronic Co., 19500 W. Eight Mile Rd., Detroit 19, Mich. Primarily designed for measuring the resistance of aluminum, it also is capable of handling other materials with low surface resistance.



. . . gages effectiveness of cleaning

The indicator measures directly the total surface resistance of two sheets, or coupons, when placed between two self-contained electrodes. It measures resistance as low as one-millionth of an ohm on a direct reading linear scale calibrated 0 to 100 microhms. Values of 10, 15, 20 microhms can be read as easily as 100.

Unit is operated from a direct current source consisting of a standard 6-v, automotive storage battery.

Magnet Aids Testing

USE REPLY CARD—CIRCLE No. 9

Economy, speed and convenience of nondestructive thickness measurements by the ultrasonic method can be increased under awkward conditions by the use of a new magnetic fixture which holds the search unit against the plate being tested. Accessory assures good contact and prevents accidental shifting during tests. It is particularly valuable when working on ladders or staging, and when test points are beyond easy reach.

Fixture consists of a flat spring with an Alnico permanent magnet coupled flexibly to each end, and means for attaching the searching unit quickly and easily to its cen-

make your PUNCH PRESSES Automatic

It's Easy...with WITTEK Roll Feeds and Reel Stands

Wittek Roll Feeds handle any type of coiled strip stock and are made in single roll, double roll, and compound types with straighteners, in models to feed in any of four directions. They are reliable and accurate with simple, quick adjustment of feed length. Standard sizes and models meet a wide variety of press size and capacity conditions.

Wittek Reel Stands facilitate handling coiled stock.

*Write for full particulars

WITTEK Manufacturing Co.

4328 W. 24th Place, Chicago 23, Illinois

Automatic ROLL FEEDS AND REEL STANDS

NON-FLUID OIL

TRADE MARK REGISTERED

OIL PROGRESS WEEK OCT. 12-18

Since 1947, the Oil Industry has annually set aside a week to call to the public's attention the story of oil and the amazing progress being unfolded by the industry.

Since 1896, for 56 years, NON-FLUID OIL, with its exclusive drip-less, waste-less properties has been setting the pace in Oil Progress. Today, with such grades as super-adhesive F-#925 designed for shake outs and screens and the new NR (non rust) grades for pneumatic tools and equipment, NON-FLUID OIL is still the progressive pioneer in industrial lubrication.

Write for complete information and samples of the grades of NON-FLUID OIL in which you are interested.

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NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture.

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LARGE BLANKED PARTS—WITH
THE ADDED ECONOMY OF MATCH-
ING BLANKS FOR DOORS,
COVERS, HATCHES, ETC.

Standard Steel Spring Company

that can't wait!

BLANKING AND FORMING LARGE, HEAVY GAUGE PARTS of ARMOR PLATE for Ordnance

Giant presses provide the fastest, most economical solution to the problem of producing large complex shapes of armor plate with the least waste, the utmost utility.

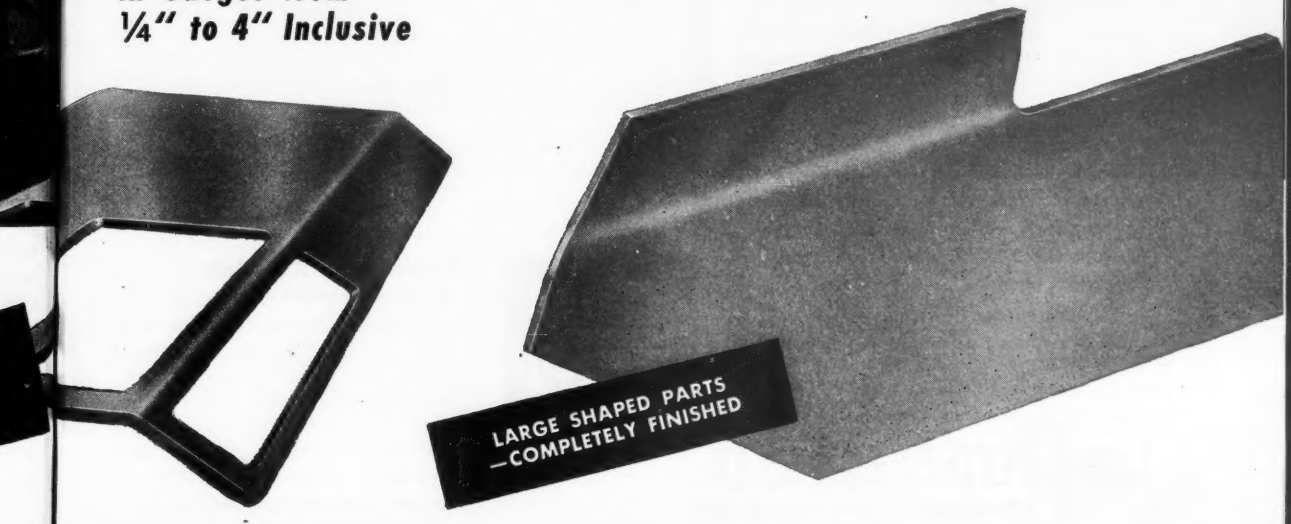
Such presses are now making short work of big jobs in the plants of our integrated group of subcontractors. With this unexcelled equipment parts can now be formed or blanked out of plates in a size range never before possible.

Standard Steel Spring armor plate service extends through every phase of manufacture—from properly engineering the parts through tooling and expediting—right down to final inspection.

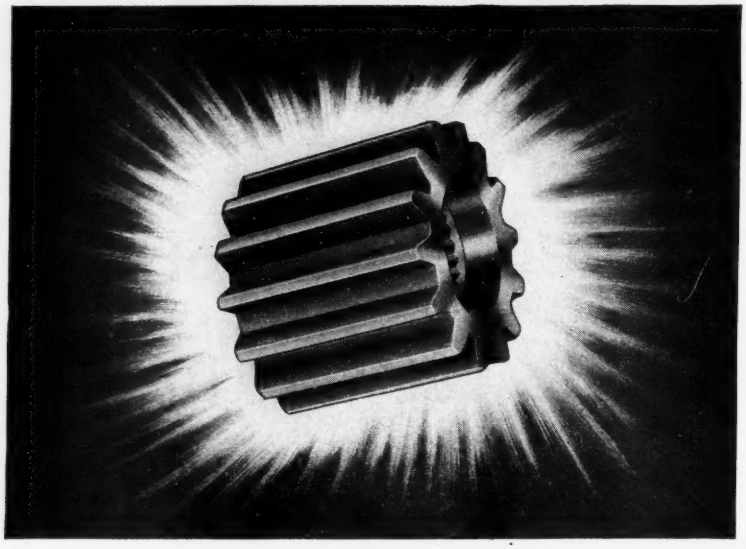
If you have a pressing problem in armor plate—or one relating to heat-treating, machining, even subassembly—you will save time and money by addressing your inquiries to us.

EVERY FACILITY FOR PRODUCING ARMOR PLATE

Ready to Assemble In Gauges from ¼" to 4" Inclusive



ARMOR PLATE DIVISION • PENOBSCOT BLDG. • DETROIT, MICHIGAN



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ARMORED Gear
might save you a good many dollars

Increasing gear life may be a real problem for you but it's our business. It is something we do by combining design, metal, and machining with a special heat-treating process and experience we have gained making quality gears since 1914.

The PITTSBURGH Armoring process puts the right hardness in the right places. It makes the wearing surfaces hard but leaves the core tough and shock-resistant. **Armored Gears** are so good that we guarantee them to give you longer service.

By changing to PITTSBURGH **Armored Gears** in a product you make, or on a machine you use, you might save a good many dollars. Our engineers will gladly consult with yours to work out a solution. Write us today for prompt attention.

Look for the "**Pittsburgh Purple**" protective coating on the gears you buy.

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Your Guarantee of Longer Life

PITTSBURGH GEAR COMPANY
27th & Smallman Streets
Pittsburgh 22, Pa.
Phone: ATlantic 1-9950

subsidiary of BRAD FOOTE GEAR WORKS, INC. • CICERO 50, ILLINOIS

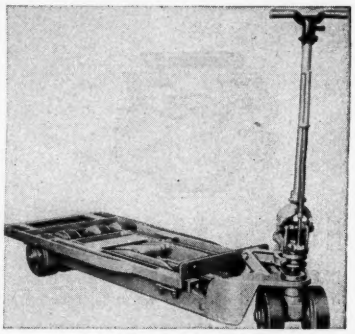
ter. Standard fixture is 5 inches wide and weighs 6 ounces. Manufacturer is Branson Instruments Inc., 430 Fairfield Ave., Stamford, Conn.

Truck Cushions Loads

USE REPLY CARD—CIRCLE No. 10

If your handling involves the moving of fragile materials, here's a truck that cushions the load in a wide variety of uses such as handling green sand cores, patterns and delicate electronic parts.

The cushioning, in the latest hydraulic lift truck developed by West Bend Equipment Corp., West Bend. Wis., is provided by a spring-suspended frame which is superimposed on the lifting frame—both



. . . spring-suspended frame cuts shock

of which are raised by action of the horizontal hydraulic lifting unit.

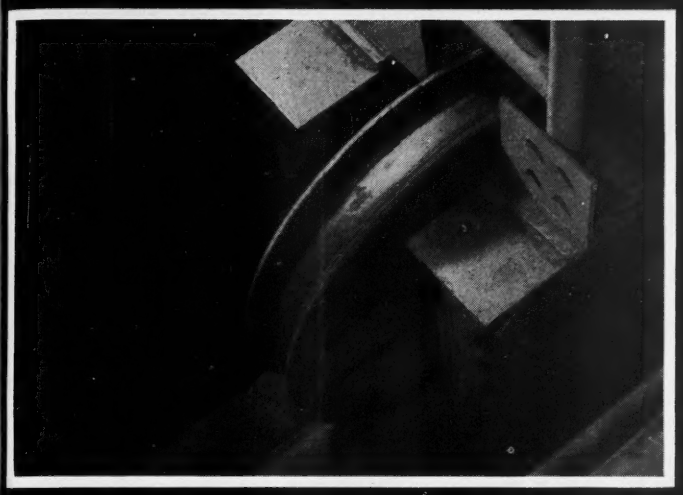
Available in capacities of 2000 to 6000 pounds, the new truck is equipped with three or more sets of coiled compression springs on each side of the top frame, depending on the required capacity. It also is built with lowered heights of 7, 8 and 11 inches.

Rivets Fragile Materials

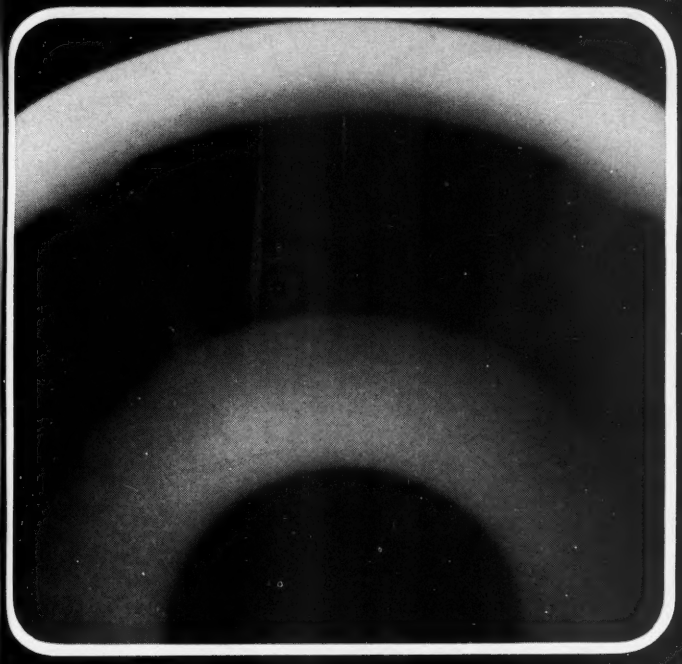
USE REPLY CARD—CIRCLE No. 11

If you're having trouble with bent rivets, improperly formed heads, loose joints or marred work, here's a pneumatic riveter that may solve your problems. It is especially suitable on precision jobs involving fragile materials, or slender, unsupported rivets.

The improved tool, announced by Lemert Engineering Co., Plymouth, Ind., includes a new spindle that minimizes impact noise, and a



Big loads going up–



so RADIOGRAPHY checks the crane wheel

YOU'RE dealing with big stresses and strains when you jockey multi-ton loads of metal around your plant. Every part of the crane must be ready for its job—with an extra margin.

That is why this crane wheel was checked by radiography. It was the one way to prove whether gas pockets or other internal defects might exist to cause a hazard.

Foundries working with all kinds of metals and alloys are finding it increasingly important to radiograph their castings. Then they know only quality products are released. Also in planning long production runs, radiography of pilot castings often indicates ways to improve methods and increase yield.

See your x-ray dealer. He'll gladly show you how radiography can increase your production and improve quality. Also send for a free copy of "Radiography as a Foundry Tool."

EASTMAN KODAK COMPANY
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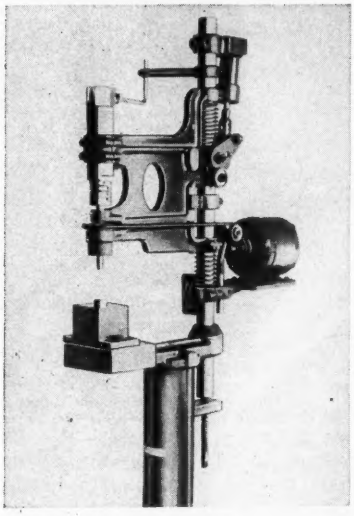
rotating hammer, blows of which can be closely regulated as to force, rapidity and duration, depending on the job. As the peen rotates, only a small cross-sectional area of the rivet head is subjected to the force of each blow.

An air timing valve enables the riveter to go through a cycle of operation at a touch of a foot pedal. It may be set for a series of impacts ranging in duration from 5/10-second to any desig-



. . . force, speed regulated independently

nated length of time. Both force of blow and hammering speed may be regulated independently of each other. The ranges: 5 to 80 psi, and from 6000 to 16,000 strokes per minute.

The new model is being made in two styles—floor and bench types, either for general riveting or for simultaneous heading both ends of a rivet.

Two Controls in One

USE REPLY CARD—CIRCLE No. 12

Giving the same individual control as two separate instruments, Twin Simplytrols control two heating elements. Suggested uses include injection molding, compression molding, heated forming dies, rubber platens and other equipment having two heating sections.

Product is manufactured by Assembly Products Inc., Chagrin Falls, O. Many ranges are available for temperatures from minus

Ready-Power Drive is full electric drive featuring simple handling and full control, but with no limit to the hours of operation at peak efficiency. No wonder operators on incentive jobs prefer Ready-Power equipped trucks . . . they get more work done with less effort!

Remember...Your Truck Is No Better Than Its Power!

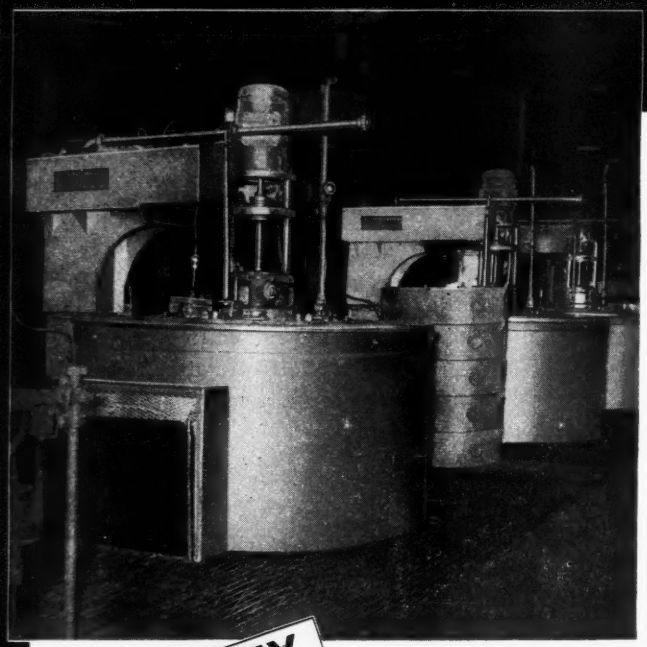
CONTINUOUS-DUTY POWER UNITS

The READY-POWER Co.

3824 Grand River Ave., Detroit 8, Michigan

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

FEDERAL BEARINGS CO. has
ACCURATE
Carbon CONTROL



WITH A
HEVI DUTY®
Vertical Retort
Furnace

Federal Bearings Company of Poughkeepsie, New York accurately controls the carburizing of certain bearing races in a Hevi Duty Furnace.

Multiple Zone Control of radiant type heating elements assures even heat distribution from top to bottom of the load.

Forced Circulation assures that the carburizing atmosphere reaches all surfaces of even the most dense loads.

You, too, can produce consistently uniform results if you specify Hevi Duty Vertical Retort Furnaces for Carburizing, Nitriding, Dry Cyaniding and Bright Annealing.

Write for Bulletin HD-646.

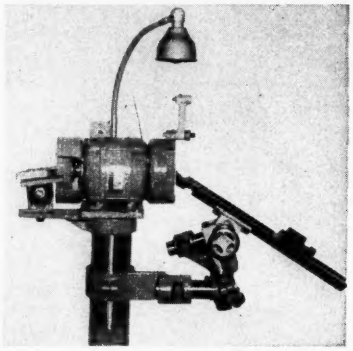
HEVI DUTY ELECTRIC COMPANY
MILWAUKEE 1, WISCONSIN
Heat Treating Furnaces... Electric Exclusively
Dry Type Transformers *Constant Current Regulators*

200° F to 3000° F with the corresponding centigrade figures shown on the dials. Two meters in a Twin can be the same or there can be a different range for each.

Drill Grinder Improved

USE REPLY CARD—CIRCLE No. 13

Using neither collets nor chucks, an improved drill grinder, introduced by McDonough Mfg. Co., Eau Claire, Wis., handles drill sizes from ⅛ to 2½ inches. The unit, referred to as the model D, also



. . . employs neither collets nor chucks

grinds 3 and 4-lip core drills without making any changes in the machine or using special fixtures.

The grinder includes an adjustment for clearance angle and a built-in diamond wheel dresser. It also automatically compensates for wheel wear.

Simpler Shelving

USE REPLY CARD—CIRCLE No. 14

Line of steel storage shelving, counters, cabinets and machine stands is introduced by Royal Metal Mfg. Co., Chicago, Ill. The company says the line needs 80 per cent less bolting than other shelving, has tool-less adjustment and simple assembly.

Plug-In Circuit Breaker

USE REPLY CARD—CIRCLE No. 15

Designated K-173, a plug-in circuit breaker, introduced by Trumbull Electric Department, General Electric Co., Plainville, Conn., is designed for the protection of three-wire lighting systems. It can also be used for two-wire systems by connecting the circuit to two protected poles of the breaker.

Rated at 125 v, ac or dc, with trip ratings from 10 to 50 amp, device can be used on any frequency system between 60 and 400 cycles.

Hydraulic Three-Arm Puller

USE REPLY CARD—CIRCLE No. 16

Owatonna Tool Co., 398 Cedar St., Owatonna, Minn., announces its Power-Twin hydraulic puller is adapted for use with the company's three-arm pullers. Pulling jobs that require a three-arm puller are said to be accomplished 75 per cent faster and easier than with a screw-powered puller.

Brass Hose Couplings

USE REPLY CARD—CIRCLE No. 17

Le-Hi series 900 brass long shank hose couplings made of machined brass bar stock are available from Hose Accessories Co., Philadelphia 32, Pa. Method of construction produces a leakproof and nonporous coupling.

Lead-Lag Ballast

USE REPLY CARD—CIRCLE No. 18

A lead-lag slimline ballast in 38, 58 and 75-w two-lamp sizes is available from Westinghouse Electric Corp., Pittsburgh 30, Pa. A 25 per cent reduction in wattage losses puts it in the series-ballast class for operating economy.

Gaging Head

USE REPLY CARD—CIRCLE No. 19

Sheffield Corp., Dayton 1, O., has developed the Plunjet gaging head for use in conjunction with Precisionaire and other makes of air gages for gaging wide tolerance work. It is calibrated by a feeler gage having minimum and maximum limit elements. Two types are available, normal and reverse. They are made in three standard ranges: 0.040, 0.020, 0.010.

Spring Plungers

USE REPLY CARD—CIRCLE No. 20

A series of high speed spring plungers for high speed automatic punch presses and other machine tools is offered by Vlier Mfg. Co., Los Angeles 4, Calif. Silvertip plungers enable operator to position and release workpiece faster without spring failure due to crys-

HOTPOINT, INC., achieves
PRODUCTION SAVINGS

WITH A HEVI-DUTY®
Shaker Hearth Furnace

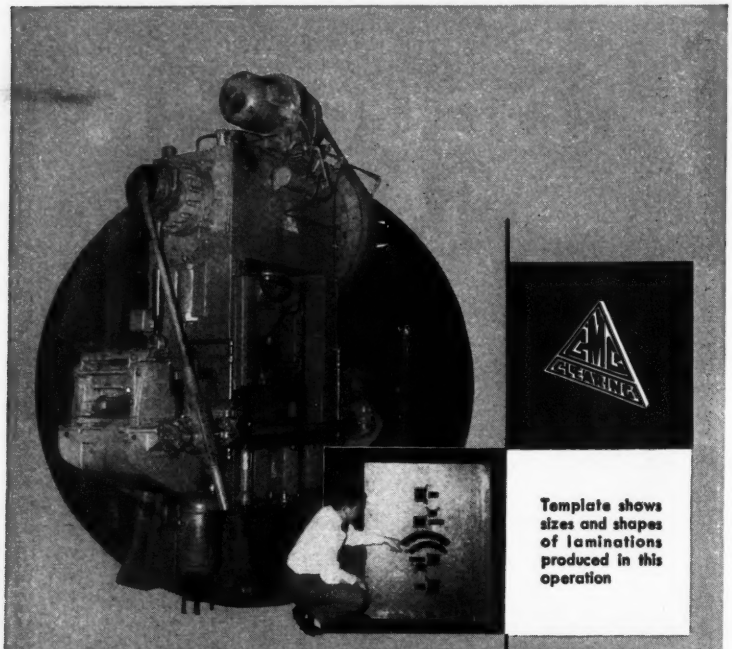
Saves
LABOR
MATERIAL
FLOOR SPACE
with a better product resulting!

Cost savings in six months from heat treating one type of switch spring alone have equalled the cost of the furnace. Formerly it took one week to produce 40,000 springs; now the same job is done in six hours. A high rejection rate has been practically eliminated.

Learn more about this modern production tool and the way it can help you.

Write for Bulletin HD-850 today.

HEVI DUTY ELECTRIC COMPANY
MILWAUKEE 1, WISCONSIN
Heat Treating Furnaces... Electric Exclusively
Dry Type Transformers *Constant Current Regulators*



Template shows sizes and shapes of laminations produced in this operation

LOGICAL CHOICE

This Clearing press in the new multi-million dollar "dream plant" of Lincoln Electric Company at Cleveland is producing laminations at 150 strokes per minute, with automatic feed and scrap cutting. Perhaps no manufacturer is better known than Lincoln Electric for its unremitting attention to costs, coupled with a famed incentive system that gives its workers an average yearly wage exceeding $7,000. Only the most efficient equipment can win a place in such a plant. It's no coincidence that Clearing presses are commonly found in plants that are setting new standards for industry. Clearing presses have been setting new standards on their own—new conceptions of speed, of accuracy, of die life. It will pay you to check with Clearing engineers for a forward-looking answer to your press problems.

CLEARING MACHINE CORPORATION
6499 WEST 65TH STREET ★ CHICAGO 38, ILLINOIS
HAMILTON DIVISION, HAMILTON, OHIO

CLEARING PRESSES
THE WAY TO EFFICIENT MASS PRODUCTION

tallization. They range in length from ½ to 2¼ inches.

Flooring Material

USE REPLY CARD—CIRCLE No. 21

Latex-O-crete, a development of United Laboratories Inc., Cleveland 12, O., is a flooring material that resists destructive action of chemicals, many acids and solvents. It may be applied directly over the old surface at an average depth of ¼-inch.

Waterproof Sandpaper

USE REPLY CARD—CIRCLE No. 22

Tufbak Speed-wet Durite paper, developed by Behr-Manning Corp., Troy, N. Y., is a waterproof sandpaper. It is said to have freeness of cut and ability to maintain the initial sharp bite necessary in wet sanding. Tough backing permits maximum flexibility.

Carbide Gage Block

USE REPLY CARD—CIRCLE No. 23

Croblox, a carbide gage block made from chrome carbide, is offered by Webber Gage Co., Cleveland, O. It features corrosion resistance and a similarity to steel in the coefficient of expansion. A surface finish of 0.1 micro-inch is attainable.

Side Milling Cutters

USE REPLY CARD—CIRCLE No. 24

Staggered tooth, indexable solid carbide blade, side milling cutters have been added to the Futurmill line of Detroit Milling Cutter Co., Farmington, Mich. When cutting surface is dull, blade can be indexed to another cutting position. Eight indexes in all are possible.

Hard Facing Electrode

USE REPLY CARD—CIRCLE No. 25

A hard facing electrode giving a deposit material consisting of chrome, manganese, silicon, iron

USE A
REPLY CARD
Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

71. Temperature Control

Illinois Testing Laboratories, Inc. —The Alnor Pyrotac, a temperature control unit that automatically monitors up to 20 individual temperature points per minute is subject of 8-page descriptive brochure 4703. Featured are line drawings on typical applications. Unit can be used in almost any operation where heat is involved.

72. High Temperature Alloy

Haynes Stellite Co.—Alloy No. 25 is a ductile cobalt-base alloy for high temperature service and is described in 12-page technical bulletin F-7807. It withstands a minimum stress of 6000 psi for 100 hours at 1800° F. Properties, general information, short-time tensile data, stress-rupture data, creep data and comparative information are included.

73. Cast Iron Welding

Eutectic Welding Alloys Corp. —Case histories of savings in production and maintenance through use of EutecTrode 27 electrode for welding all types of cast iron are cited in 8-page folder TIS 991. This alloy contains no critical nickel.

74. Exhaust Fans

American Machine & Metals, Inc., DeBothezat Fans Div.—Specifications, dimensions and capacities of Bifurcator fans with 12 to 48-in. diameters for handling up to 45,000 cfm of air are included in revised 8-page bulletin DB-4-52. Fans are designed for exhausting fumes or gases which are abnormally hot, flammable or explosive. Motor is mounted in a separate chamber, isolated from gases.

75. Stainless Fastenings

Anti-Corrosive Metal Products Co. —Complete size and price data are tabulated in 80-page illustrated (second edition) catalog No. 48 relative to "Fastenings of Stainless Steel." Tabbed sections cover machine screws, nuts, bolts & cap screws, sheet metal and wood screws, rivets, set screws, washers, pins, nails, type 316 alloy, special alloys, aircraft fastenings and general information. Supplementary stock list No. 22 accompanies this catalog.

76. Tips On Tooling

Ex-Cell-O Corp.—"Tool Tips" is the title of a publication of this company which puts into words and pictures new tooling and machining practices and procedures which have saved others time and money. You might benefit as well by receiving it.

77. Permanent Mold Castings

Eaton Mfg. Co., Foundry Div.—Reprints of five informative advertisements which have appeared in a number of business publications are contained in 8-page illustrated bulletin. Advantages and applications of permanent mold gray iron castings are presented.

78. Safety Limit Stops

Electric Controller & Mfg. Co.—Complete details on the various types, sizes and adaptations of Youngstown safety limit stops for alternating and direct current cranes are in 8-page illustrated bulletin 1032. Much general information and installation data are included.

79. Electric Tools

Ingersoll-Rand Co.—36-page catalog No. 5111 covering line of Multi-Cycle electric tools lists over 100 different sizes in both 180 and 360-cycle models. Sections pertinent to Impactools, nut runners, drills, screwdrivers, grinders, buffers, sanders and polishers, as well as lists of equipment and accessories are included.

9-15-52

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80. Optical Gaging

Eastman Kodak Co. — Did you know that accuracy, speed and economy can be achieved in modern production gaging and inspection through the use of optical gaging techniques? The entire subject of optical gaging and equipment to be used are related in 4-page bulletin F3-61.

81. Insulation & Refractories

Illinois Clay Products Co.—Details on Therm-O-Flake high temperature vermiculite insulation, Hi-Silica and Carbon Chem-Brix chemically bonded refractory brick and line of Goose Lake refractories including fire clay brick and flour, tap hole mix and ground fire clay are to be found in 4-page folder.

82. Mill Lubrication

E. W. Bliss Co.—"Rolling Mill Lubrication Data" is a 20-page illustrated manual on correct lubrication practice as applied to rolling mills. Such subjects as circulating oiling systems, centralized pressure greasing, manual lubrication of gears and ways, and hydraulic circuits are discussed. If you operate rolling mills, you should have this guide.

83. Squirrel-Cage Motors

Allis-Chalmers Mfg. Co.—Construction features, ratings and dimensions of open dripproof type AP and splashproof type APWW squirrel-cage induction motors are found in illustrated bulletin 51B6210D. Ratings range from ½ to 100 hp. Special modifications offered are detailed.

84. Potheads & Terminals

Anaconda Wire & Cable Co.—100-page illustrated catalog No. C79-13 contains design data and information, plus instructions for properly ordering and installing all types of potheads and terminals up to 46 kv. It features both outdoor and indoor types and popular designs for transformers and switchgear.

85. Electrical Fittings

Buchanan Electrical Products Corp. —12-page illustrated catalog 52 describes complete line of solderless wire connectors, cable and conduit fittings, and wiring devices. Included are data on pre-SURE-connectors for solderless wire splicing and terminating, Bushend insulated conduit bushings, box connectors for nonmetallic sheathed cables, conduit locknuts, knockout plugs and terminal blocks.

EDITORIAL REPRINTS:

86. Small Parts Handling

How much materials handling equipment would a firm need to save more than $9000 in one year's time? One Detroit steel fabricator put one fork truck to work and improved parts container design—results, a saving of $9152 per year in handling costs. Read all about it in STEEL reprint "Handling Costs Cut in Parts Assembly."

87. Flame Radiation Furnace

Full scale furnace tests at a steel plant in Holland disclose that steam employed for atomizing fuel oil lowers peak radiation of flame and extends peak further from burner. Detailed results of 48 performance trials of oil fuels are presented in STEEL reprint "Luminous Flame Increases Heat Transfer."

88. Engine Blocks

"Engine Blocks: Sandwiched from Simple Castings" is title of STEEL reprint which relates how complicated castings can be broken down into simple components, then furnace brazed to form the finished part. Use of the process by Alcoa's Cleveland Development Div. on aluminum engine blocks is promising.

89. Raw Metal Conservation

Political and geographic barriers have wiped out important raw metal sources for the United States. Result is a program of strict conservation and liberal substitution. J. G. Terry of Armco Steel Corp. discusses this search for alternates and conservation policy in STEEL reprint "Strategic Elements—Emphasis Is on Conservation."

90. Labor Relations

To learn the thoughts and philosophy of a 'human relations' executive who has been conspicuously successful since his start in the field 18 years ago, STEEL's editors interviewed Raymond S. Livingstone, vice president-personnel, Thompson Products, Inc. Reprint of this interview entitled "20 Questions: A Case Study in Human Engineering" is now available.

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6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

STEEL 9-15-52
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alloy, is offered by Wall Colmonoy Corp., Detroit 3, Mich. Hardness of the deposit ranges from 49 to 53 Rockwell C. Deposit has good abrasion and shock resistance and has stainless qualities approximately equivalent to type 410 stainless steel.

Carbide Cutoff Tool

USE REPLY CARD—CIRCLE No. 26

Gay-Lee Co., Clawson, Mich., offers a solid carbide cutoff tool for Brown & Sharpe automatic screw machines. It provides for strong support of the solid carbide blade. Steel hub and carbide blade are brazed to form a single permanently bonded unit. Grind is gashed to provide two cutting edges.

Clutch Head Screwdrivers

USE REPLY CARD—CIRCLE No. 27

An assortment of eight screwdrivers with a special tip design for servicing Nos. 2 through 14, ¼, 5/16 and ⅜ clutch head screws is available from J. H. Williams & Co., Buffalo 7, N. Y. Blades are round, hardened and tempered.

Acetylene Regulator

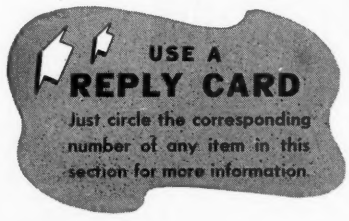
USE REPLY CARD—CIRCLE No. 28

Prest-O-Lite acetylene regulator with ample capacity for efficient use of any air-acetylene torch or appliance, is available from Linde Air Products Co., New York, N. Y. Acetylene at pressures up to 13 psi can be delivered. Once set, the R-411 automatically delivers gas at precisely correct working pressure.

Coated Abrasive Polishing Belt

USE REPLY CARD—CIRCLE No. 29

Minnesota Mining & Mfg. Co., St. Paul, Minn., announces a coated abrasive polishing belt that uses granulated cork for obtaining a high luster on metal, plastic and glass. It is designated as the 3M Wetordry polishing belt.



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Universal Gas Mask Style WUG
Approved by U. S. Bureau of Mines for toxic smokes and gases, including carbon monoxide.

Chemical Cartridge Respirator No. 831
Protects against common industrial gases and vapors in low concentration. New molded rubber facepiece with flexible rolled edge for extra comfort. Bureau of Mines Approval No. 2302.

No. 880 for metal fumes, mists and dusts
Same facepiece as No. 831, with replaceable dust filters. Comfortable under welding helmet. Bureau of Mines Approval No. 2149.

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The Market Outlook

THE NEXT eight weeks will be a crystal ball for steel producers and consumers. That period will clear up a lot of questions about the size of steel demand and supply for some time to come.

The eight weeks will take us through the national election week. Reports persist that President Truman will bend every effort to get the Korean war ended before the election so that voters will feel the Democratic party is a party of accomplishment. An end of that unpopular war couldn't help but take some of the pressure off the demand for military steel. Lessened demand for military steel would leave more for civilian uses.

CLEAN-UP—By the end of this month the steel industry expects to have cleaned up the military steel orders that accumulated during the steelworkers' strike. This clean-up should begin to take some of the squeeze off shipments of steel for civilian uses.

REVEALING—The next eight weeks should unfold also a strong clue as to size of civilian steel demand for some months to come. By that time the demands accumulated during the steelworkers' strike will have been satisfied to some degree, and civilian attitudes should be more in terms of current needs. The auto industry is so optimistic that it is programming big production schedules. September will be its best output month in more than a year. By election day it should be pretty clear whether the big production of autos is selling up to expectations. The auto industry is a master key to steel demand and production, for it is the biggest consumer of that metal. Right now there are indications of a pick-up in the appliance, radio and TV businesses. Two months' time will show whether this is just a flash-in-the-pan.

The next eight weeks will determine too whether a coal miners' strike will cause another break in steel production this year.

FLOOD TIDE—If there are no production interruptions, a lot of steel will have flowed into the economy by election day. Production of steel for ingots and castings is again above rated capacity, and additional capacity will continue to come into operation. STEEL calculated the output rate in the week ended Sept. 13 as 101 per cent of capacity.

HEALTHY—Reflecting the favorable producing position of the nation's steel mills, steel plants in the Youngstown area are in the best shape of the year to turn out a heavy volume of ingots. They have the best quality scrap they have had in a year, and blast furnaces which during last winter limped along in need of repairs have been relined and are in top producing form.

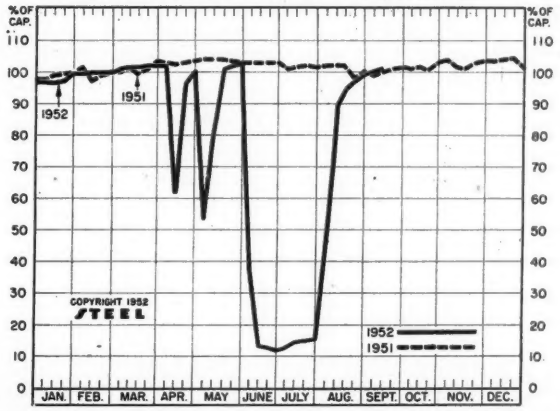
Also brightening the production picture is the record-breaking movement of iron ore down the Great Lakes. Tie-up of ore shipping during the steelworkers' strike had caused fears of an ore shortage next winter. The government last week okayed a 75-cents-per-ton increase in ore prices.

BACK IN LINE—As some of the effects of the strike wear off, products that were in easy supply or trending that way before the strike are returning to their pre-strike easiness. Among them are wire, cold-rolled strip, tool steel, straight chrome sheets and wire rope. Demand for futures in structural shapes continues to soften, partly because of government restrictions on construction. Pressure for shapes for fabrication this fall is still heavy.

Remaining in tight supply are large-size hot-rolled and cold-finished carbon bars, heavy and wide carbon plates, and hot-rolled and cold-rolled carbon sheets. Bars 1-inch and under are easing. Help to some plate users is at hand. Two big eastern producers of heavy and wide plates have completed repairs and are resuming production.

SLOW MOTION—Scrap, a closely watched barometer in the steel industry, is stagnant marketwise. Mill inventories of scrap are high and there is reluctance to buy. In some areas, some steel scrap grades are swinging below government ceilings, just as they were before the end of the steel strike firmed them up pricewise.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Sept. 13	Change	Same Week 1951	Same Week 1950
Pittsburgh	100	+ 2*	98.5	101
Chicago	102.5	+ 1*	105	101.5
Mid-Atlantic	98	+ 1	98	98.5
Youngstown	106	0	106	106
Wheeling	95	0	95	95.5
Cleveland	105	0*	101	101
Buffalo	104.5	0	104	104
Birmingham	100	0	100	100
New England	85	— 5	90	79
Cincinnati	91	+ 1	103	106
St. Louis	101	+25	92.5	91
Detroit	106	+ 2	103	106
Western	100	— 3	99	103.5
Estimated national rate	101	+ 1	100	101

Based on weekly steelmaking capacity of 2,077,040 tons in 1952; 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950.

* Change from revised rate for preceding week.

The Metalworking Outlook—p. 55 Production-Engineering News—p. 91

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics	Sept. 9, 1952	Sept. 2, 1952	Month Ago	August Average
(1947-1949)=100	130.8	130.8	130.8	130.8

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Sept. 9, 1952

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$3.775	Sheets, C.R. carbon	$5.275
Track spikes	6.650	Sheets, galv.	6.995
Track bolts	9.850	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.325
Joint bars	4.925	Pipe, black, buttweld (100 ft)	7.090
Plates, carbon	4.150	Pipe, galv., buttweld (100 ft)	9.106
Structural shapes	4.200	Boiler tubes (100 ft)	31.360
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.575	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.500
Bars, reinforcing	4.050	Nails (100 lb keg)	7.380
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.960
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.810

	Sept. 11 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL PRICE INDEX, Weighted:					
Calculated by STEEL*					
Index (1935-39 av.=100)	181.40	181.40	181.40	171.92	120.39
Index in cents per lb.	4.914	4.914	4.914	4.657	3.261
ARITHMETICAL PRICE COMPOSITES:					
Calculated by STEEL*					
Finished Steel, NT	$111.66	$111.66	$111.66	$106.32	$75.41
No. 2 Fdry, Pig Iron, GT	55.04	55.04†	55.04†	52.54	36.59
Basic Pig Iron, GT	54.66	54.66†	54.66†	52.16	36.20
Malleable Pig Iron, GT	55.77	55.77†	55.77†	53.27	37.13
Steelmaking Scrap, GT	43.00	43.00	43.00	44.00	37.83

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.
† Revised.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Sept. 11 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del. Philadelphia	4.502	4.502	4.502	4.223	3.28
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.94
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.15
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.15
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60–75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.70
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.90
Strip, H.R., Pittsburgh	3.75-4.00	3.75-4.00	3.75-4.00	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-5.60	5.30-5.60	5.30-5.60	4.85-5.60	3.70
Wire, Basic, Pittsburgh	4.85-5.225	4.85-5.225	4.85-5.225	4.85-5.10	3.675
Nails, Wire, Pittsburgh	5.90-6.35	5.90-6.35	5.90-6.35	5.90-6.20	4.25
Tin plate box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$5.75
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$56.50
Wire rods, ½-⅝", Pitts.	4.325	4.325	4.325	4.10–30	2.925
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$37.00
Basic, Valley	54.50	54.50	54.50	52.00	36.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	38.72
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	36.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.11	39.22
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	34.88
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	38.25
Malleable, Valley	55.00	55.00	55.00	52.50	36.50
Malleable, Chicago	55.00	55.00	55.00	52.50	36.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	44.00
Ferromanganese, Etna, Pa.	228.00	228.00	188.00	188.00	140.25*

* F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	$44.00	$44.00	$44.00	$45.00	$38.00
No. 1 Heavy Melt, E. Pa.	41.50	41.50	41.50	43.50	36.75
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	43.50	38.75
No. 1 Heavy Melt, Valley	44.00	44.00	44.00	45.00	39.00
No. 1 Heavy Melt, Cleve.	43.00	43.00	43.00	44.00	38.25
No. 1 Heavy Melt, Buffalo	43.00	43.00	37.00*	44.00	37.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	46.25
No. 1 Cast, Chicago	50.00	50.00	45.00	49.00†	43.50

* Nominal. † F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connisvl.	$14.75	$14.75	$14.75	$14.75	$11.50-12.50
Beehive, Fdry, Connisvl.	17.00	17.00	17.00	17.50	14.00-15.00
Oven Fdry, Chicago	23.00	23.00	23.00	23.00	17.50

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.	....	60.78	61.28	....
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38	....	....
Birmingham R2	50.88	51.38	....	....
Birmingham S9	....	51.38	....	....
Woodward, Ala. W15	50.88	51.38	....	....
Cincinnati, del.	....	58.93	....	....
Buffalo District				
Buffalo R2	54.50	55.00	55.50	....
Buffalo H1	54.50	55.00	55.60	....
Tonawanda, N.Y. W12	54.50	55.00	55.50	....
No. Tonawanda, N.Y. T9	....	55.00	55.50	....
Boston, del.	65.15	65.65	66.15	....
Rochester, N.Y. del.	57.52	58.02	58.52	....
Syracuse, N.Y. del.	58.62	59.12	59.62	....
Chicago District				
Chicago I-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50	....	55.00	....
IndianaHarbor, Ind. I-2	54.50	....	55.00	....
So. Chicago, Ill. W14	54.50	55.00	55.00	....
So. Chicago, Ill. Y1	54.50	55.00	55.00	....
So. Chicago, Ill. U5	54.50	....	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich. del.	....	61.30	61.30	....
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	....
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O. N3	54.50	....	....	55.50
Duluth I-3	....	....	55.00	....
Erie, Pa. I-3	54.50	55.00	55.00	55.50
Everett, Mass. E1	....	59.75	60.25	....
Fontana, Calif. K1	58.00	58.50	....	....
Seattle, Tacoma, Wash., del.	....	60.66	....	....
Portland, Oreg., del.	....	60.66	....	....
LosAngeles, SanFrancisco, del.	60.16	60.66	....	....
GraniteCity, Ill. G4	56.40	56.90	57.40	....
St. Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton, Utah C11	54.50	55.00	....	....
Geneva, Utah C11	54.50	55.00	....	....
LoneStar, Tex. L6	48.00	*48.50	48.50	....
Minnequa, Colo. C10	56.50	57.50	57.50	....
Rockwood, Tenn. T3	....	....	58.50	....
Pittsburgh District				
NevilleIsland, Pa. P6	....	55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.	....	56.37	56.37 *	56.87
McKeesRocks, del.	....	56.04	56.04	56.54
Lawrenceville, Homestead,				
Wilmerding, Monaca, del.	....	56.66	56.66	57.16
Verona, Trafford, del.	....	57.19	57.19	57.69
Brackenridge, del.	....	57.45	57.45	57.95
Bessemer, Pa. U5	54.50	....	55.00	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50	....	....	....
McKeesport, Pa. N3	54.50	....	....	55.50
Monessen, Pa. P7	56.50	....	....	....
Sharpsville, Pa. S6	....	....	55.00	55.50
Steelton, Pa. B2	56.50	57.00	57.50	58.00
Swedeland, Pa. A3	58.50	59.00	59.50	60.00
Toledo, O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	....
Troy, N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O. Y1	54.50	55.00	55.00	....
Youngstown Y1	54.50	55.00	55.00	....
Youngstown U5	54.50	....	....	55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

* Low phos, southern grade.

PIG IRON DIFFERENTIAL

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.
Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion therof.
Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton
(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$65.50
Buffalo H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton
(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls, N.Y. P15	$91.00
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton
(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$59.50
Steelton, Pa. B2	62.50
Philadelphia delivered	66.05
Troy, N.Y. R2	62.50

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Sept. 11, 1952; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 .....54.00
Seattle S24 .....73.00
INGOTS, Alloy (NT)
Detroit R7 .....$57.00
Fontana,Calif. K1 ....83.00
Houston S5 .....62.00
Midland,Pa. C18 .....54.00
Munhall,Pa. U5 .....57.00
Seattle S24 .....80.00
BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 .....$59.00
Clairton,Pa. U5 .....59.00
Ensley,Ala. T2 .....59.00
Fairfield,Ala. T2 .....59.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 .....59.00
Johnstown,Pa. B2 .....59.00
Lackawanna,N.Y. B2 ..59.00
Munhall,Pa. U5 .....59.00
So.Chicago,Ill. U5 ....59.00
So.Duquesne,Pa. U5 ...59.00
Carbon, Forging (NT)
Bessemer,Pa. U5 .....$70.50
Buffalo R2 .....70.50
Canton,O. R2 .....70.50
Clairton,Pa. U5 .....70.50
Cleveland R2 .....70.50
Conshohocken,Pa. A3 ..77.50
Detroit R7 .....73.50
Ensley,Ala. T2 .....70.50
Fairfield,Ala. T2 .....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 .....70.50
Geneva,Utah C11 .....70.50
Houston S5 .....74.00
Johnstown,Pa. B2 .....70.50
Lackawanna,N.Y. B2 ..70.50
LosAngeles B3 .....89.50
Munhall,Pa. U5 .....70.50
Seattle B3 .....89.50
So.Chicago R2,U5,W14..70.50
So.Duquesne,Pa. U5 ...70.50
So.SanFrancisco B3 ...89.50
Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 .....76.00
Canton,O. R2 .....76.00
Canton,O. T7 .....78.50
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....79.00
Fontana,Calif. K1 ....95.00
Gary,Ind. U5 .....76.00
Houston S5 .....78.00
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 .....76.00
Lackawanna,N.Y. B2 ..76.00
LosAngeles B3 .....96.00
Massillon,O. R2 .....76.00
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....76.00
So.Chicago R2,U5,W14..76.00
So.Duquesne,Pa. U5 ...76.00
Struthers,O. Y1 .....76.00
Warren,O. C17 .....76.00
ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$87.50
Canton,O. R2 .....87.50
Cleveland R2 .....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 .....87.50
Massillon,O. R2 .....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ...87.50
SHEET BARS (NT)
Fontana,Calif. K1 (43) .$89.00
SKELP
Aliquippa,Pa. J5 .....$3.65
Munhall,Pa. U5 .....3.55
Warren,O. R2 .....3.55
Youngstown R2, U5 ....3.55
WIRE RODS
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2 ..4.325
Buffalo W12 .....4.10
Cleveland A7 .....4.325
Donora,Pa. A7 .....4.325
Fairfield,Ala. T2 .....4.325
Fontana,Calif. K1 ....5.125
Houston S5 .....4.50
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 .....4.325
LosAngeles B3 .....5.125
Minnequa,Colo. C10 ...4.575
Monessen,Pa. P7 .....4.30
No.Tonawanda,N.Y.B11 4.325
Pittsburg,Calif. C11 ...4.975
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 .....4.425
So.Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2..4.425
Sterling,Ill.(1) N15 ....4.325
Struthers,O. Y1 .....4.325
Torrance,Calif. C11 ...5.125
Worcester,Mass. A7 ....4.625
SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.675
Lackawanna,N.Y. B2 ...4.675
Munhall,Pa. U5 .....4.675
So.Chicago,Ill. U5 ....4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.85
Aliquippa,Pa. J5 .....3.85
Bessemer,Ala. T2 .....3.85
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fairfield,Ala. T2 .....3.85
Fontana,Calif. K1 .....4.45
Gary,Ind. U5 .....3.85
Geneva,Utah C11 .....3.85
Houston S5 .....4.05
Ind.Harbor,Ind. I-2 ....3.85
Johnstown,Pa. B2 .....3.90
KansasCity,Mo. S5 .....4.25
Lackawanna,N.Y. B2 ..3.90
LosAngeles B3 .....4.45
Minnequa,Colo. C10 ....4.30
Munhall,Pa. U5 .....3.85
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....5.90
Portland,Oreg. O4 .....4.50
Seattle B3 .....4.50
So.Chicago,Ill. U5 W14.3.85
So.SanFrancisco B3 ....4.40
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 .....4.10
Alloy Stand. Shapes
Clairton,Pa. U5 .....4.725
Fontana,Calif. K1 .....5.925
Munhall,Pa. U5 .....4.725
So.Chicago,Ill. U5 ....4.725
H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.80
Bessemer,Ala. T2 .....5.80
Bethlehem,Pa.(14) B2 ..5.80
Clairton,Pa. U5 .....5.80
Fairfield,Ala. T2 .....5.80
Fontana,Calif. K1 .....6.40
Gary,Ind. U5 .....5.80
Geneva,Utah C11 .....5.80
Ind.Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 .....6.30
Johnstown,Pa. B2 .....5.80
Lackawanna,N.Y.(14)B2 5.80
LosAngeles B3 .....6.35
Munhall,Pa. U5 .....5.80
Seattle B3 .....6.40
So.Chicago,Ill. U5 .....5.80
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.30
Wide Flange
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fontana,Calif. K1 .....4.85
Lackawanna,N.Y. B2 ...3.90
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85
H.S., L.A. Wide Flange
Aliquippa,Pa. J5 .....5.50
Lackawanna,N.Y. B2 ...5.80
Munhall,Pa. U5 .....5.75
So.Chicago,Ill. U5 .....5.75
BEARING PILES
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85
PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.95
Bessemer,Ala. T2 .....5.95
Clairton,Pa. U5 .....5.95
Cleveland J5, R2 .....5.95
Conshohocken,Pa. A3 ...6.20
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....5.95
Fontana,Calif.(30) K1 ..6.55
Gary,Ind. U5 .....5.95
Geneva,Utah C11 .....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 .....6.45
Johnstown,Pa. B2 .....5.95
Munhall,Pa. U5 .....5.95
Pittsburgh J5 .....5.95
Seattle B3 .....6.85
Sharon,Pa. S3 .....5.95
So.Chicago,Ill. U5 .....5.95
SparrowsPoint,Md. B2 ..5.95
Warren,O. R2 .....5.95
Youngstown Y1 .....6.45
PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....5.35
Coatesville,Pa. L7 .....5.75
Conshohocken,Pa. A3 ...5.55
Fontana,Calif. K1 .....6.20
Gary,Ind. U5 .....5.25
Johnstown,Pa. B2 .....5.25
Munhall,Pa. U5 .....5.25
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.25
SparrowsPoint,Md. B2 ..5.25
FLOOR PLATES
Cleveland J5 .....4.95
Conshohocken,Pa. A3 ...4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 .....4.95
So.Chicago,Ill. U5 .....4.95
PLATES, Ingot Iron
Ashland,c.l. (15) A10...4.15
Ashland,l.c.l. (15) A10..4.65
Cleveland,c.l. R2 .....4.50
Warren,O.,c.l. R2 .....4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.90
Aliquippa,Pa. J5 .....3.90
Ashland,Ky. (15) A10...3.90
Bessemer,Ala. T2 .....3.90
Clairton,Pa. U5 .....3.90
Claymont,Del. C22 .....4.35
Cleveland J5, R2 .....3.90
Coatesville,Pa. L7 .....4.35
Conshohocken,Pa. A3 ..4.35
Ecorse,Mich. G5 .....4.45
Fairfield,Ala. T2 .....3.90
Fontana,Calif.(30) K1 ..4.50
Gary,Ind. U5 .....3.90
GraniteCity,Ill. G4 .....4.60
Geneva,Utah C11 .....3.90
Harrisburg,Pa. C5 .....6.30
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.90
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ..3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....3.90
Pittsburgh J5 .....3.90
Seattle B3 .....4.80
Sharon,Pa. S3 .....4.15
So.Chicago,Ill. U5, W14.3.90
SparrowsPoint,Md. B2 ..3.90
Steubenville,O. W10 ....3.90
Warren,O. R2 .....3.90
Weirton,W.Va. W6 .....4.20
Youngstown R2, U5, Y1.3.90
PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.65
Geneva,Utah C11 .....5.05
PLATES, Wrought Iron
Economy,Pa. B14 .....8.60
BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ...3.95
Aliquippa,Pa. J5 .....3.95
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2 .....3.95
Clairton,Pa. U5 .....3.95
Cleveland R2 .....3.95
Detroit R7 .....4.10
Ecorse,Mich. G5 .....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ...3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 .....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.70
So.Chicago R2,U5,W14 ..3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFran.,Cal. B3 ....4.70
Sterling,Ill. N15 .....4.55
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Weirton,W.Va. W6 .....4.10
Youngstown R2, U5 ....3.95
BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....3.95
Atlanta A11 .....4.50
Niles,Calif. P1 .....4.65
Portland,Oreg. O4 .....4.65
SanFrancisco S7 .....5.00
BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....4.15
BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.675
Buffalo R2 .....4.675
Canton,O. R2 .....4.675
Canton,O. T7 .....4.72
Clairton,Pa. U5 .....4.675
Detroit R7 .....4.825
Ecorse,Mich. G5 .....5.025
Fontana,Calif. K1 .....5.725
Gary,Ind. U5 .....4.675
Houston S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.675
Johnstown,Pa. B2 .....4.675
KansasCity,Mo. S5 .....4.90
Lackawanna,N.Y. B2 ..4.675
LosAngeles B3 .....5.725
Massillon,O. R2 .....4.675
Midland,Pa. C18 .....4.30
So.Chicago R2,U5,W14. 4.675
So.Duquesne,Pa. U5 ....4.675
Struthers,O. Y1 .....4.675
Warren,O. C17 .....4.675
Youngstown U5 .....4.675
BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.925
Gary,Ind. U5 .....4.925
Youngstown U5 .....4.925

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.925
Bessemer,Ala. T2 .....5.925
Bethlehem,Pa. B2 .....5.925
Clairton,Pa. U5 .....5.925
Cleveland R2 .....5.925
Ecorse,Mich. G5 .....6.675
Fairfield,Ala. T2 .....5.925
Fontana,Calif. K1 .....6.975
Gary,Ind. U5 .....5.925
Ind.Harbor,Ind. I-2 ....5.925
IndianaHarbor,Ind. Y1 .6.425
Johnstown,Pa. B2 .....5.925
Lackawanna,N.Y. B2 ..5.925
LosAngeles B3 .....6.625
Pittsburgh J5 .....5.925
Seattle B3 .....6.675
So.Duquesne,Pa. U5 ...5.925
So.SanFrancisco B3 ...6.675
Struthers,O. Y1 .....6.425
Youngstown U5 .....5.925
BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.925
BeaverFalls,Pa. R2 ....4.925
BeaverFalls,Pa. M12 ...4.55
Buffalo B5 .....4.975
Camden,N.J. P13 .....5.375
Carnegie,Pa. C12 .....4.55
Chicago W18 .....4.925
Cleveland A7, C20 ....4.925
Detroit P17, R7 .....5.075
Donora,Pa. A7 .....4.925
Elyria,O. W8 .....4.925
FranklinPark,Ill. N5 ....4.925
Gary,Ind. R2 .....4.925
GreenBay,Wis. F7 .....4.925
Hammond,Ind. L2,M13.4.925
Hartford,Conn. R2 ....5.475
Harvey,Ill.(1) B5 .....4.925
LosAngeles R2 .....6.375
Mansfield,Mass. B5 ....5.475
Massillon,O. R2, R8....4.925
Monaca,Pa. S17 .....4.925
Newark,N.J., W18 .....5.375
Plymouth,Mich. P5 ....5.175
Pittsburgh J5 .....4.925
Putnam,Conn. W18 ....5.475
Readville,Mass. C14 ...5.475
St. Louis,Mo. M5 .....5.30
So.Chicago,Ill. W14 ....4.925
SpringCity,Pa. K3 ....5.375
Struthers,O. Y1 .....4.925
Waukegan,Ill. A7 .....4.925
Youngstown Y1 .....4.925
Youngstown F3 .....4.55
BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....6.00
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa. B2 .....6.00
Buffalo B5 .....6.00
Camden,N.J. P13 .....6.40
Canton,O. R2 .....6.00
Canton,O. T7 .....5.99
Carnegie,Pa. C12 .....5.40
Chicago W18 .....6.00
Cleveland A7 .....6.05
Cleveland C20 .....6.00
Detroit P17, R7 .....6.15
Donora,Pa. A7 .....6.05
Elyria,O. W8 .....6.00
Gary,Ind. R2 .....6.00
Hammond,Ind. L2, M13.6.00
Hartford,Conn. R2 .....6.45
Harvey,Ill.(1) B5 .....6.00
Lackawanna,N.Y. B2 ...6.00
Mansfield,Mass. B5 ....6.45
Massillon,O. R2, R8....6.00
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....6.00
Newark,N.J. W18 .....6.35
Plymouth,Mich. P5 .....6.20
So.Chicago,Ill. R2, W14.6.00
SpringCity,Pa. K3 .....6.20
Struthers,O. Y1 .....6.00
Warren,O. C17 .....6.00
Waukegan,Ill. A7 .....6.05
Worcester,Mass. A7 ....6.35
Youngstown Y1 .....6.00
Youngstown F3 .....5.40
RAIL STEEL BARS
ChicagoHts.(3,4) C2 ....4.75
ChicagoHts.(3,4) I-2 ....4.75
Franklin,Pa.(3,4) F5 ....4.75
FortWorth,Tex.(26) T4...5.10
Huntngt,W.Va.(3) W7 .5.75
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....4.05
Tonawanda(3,4) B12 ....5.00
Williamsport(3) S19 ....5.25
Williamsport(4) S19 ....5.35
BARS, Wrought Iron
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt)L5. 14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.95
Atlanta A11 .....4.50
Buffalo R2 .....3.95
Cleveland R2 .....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 .....4.30
Lackawanna,N.Y. B2 ...3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
SandSprings,Okla. S5 ....4.60
Seattle B3, N14 .....4.70
So.Chicago,Ill. R2 .....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2 ..3.95
Sterling,Ill.(1) N15 ....4.70
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ....3.95
BARS, Reinforcing (Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ....4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.00
Seattle B3, N14 .....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ...4.75
Williamsport,Pa. S19 ...5.10
SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.775
Ashland,Ky.(8) A10 ....3.775
Butler,Pa. A10 .....3.775
Cleveland J5, R2 .....3.775
Conshohocken,Pa. A3...4.175
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.975
Fairfield,Ala. T2 .....3.775
Fontana,Calif. K1 .....4.725
Gary,Ind. U5 .....3.775
Geneva,Utah C11 .....3.875
GraniteCity,Ill. G4 .....4.30
Ind.Harbor,Ind. I-2, Y1.3.775
Irvin,Pa. U5 .....3.775
Lackawanna,N.Y. B2 ..3.775
Munhall,Pa. U5 .....3.775
Niles,O. N12 .....5.25
Pittsburg,Calif. C11 ....4.475
Pittsburgh J5 .....3.775
Sharon,Pa. S3 .....4.175
So.Chicago,Ill. W14 ....3.775
SparrowsPoint,Md. B2..3.775
Steubenville,O. W10 ...3.775
Torrance,Calif. C11 ....4.475
Warren,O. R2 .....3.775
Weirton,W.Va. W6 .....3.775
WestLeechburg,Pa.A4 ...3.75
Youngstown U5, Y1 ....3.775
SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.925
Dover,O. R1 .....5.825
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 ...5.575
SHEETS, H.R. (14 ga., heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....5.675
Conshohocken,Pa. A3 ..5.925
Ecorse,Mich. G5 .....6.225
Fairfield,Ala. T2 .....5.675
Fontana,Calif. K1 .....6.625
Gary,Ind. U5 .....5.675
Ind.Harbor,Ind. I-2 ....5.675
Ind.Harbor,Ind. Y1 .....6.175
Irvin,Pa. U5 .....5.675
Lackawanna(35) B2 ....5.675
Pittsburgh J5 .....5.675
Sharon,Pa. S3 .....5.675
So.Chicago,Ill. U5 .....5.675
SparrowsPoint(36) B2..5.675
Warren,O. R2 .....5.675
Weirton,W.Va. W6 .....6.025
Youngstown U5 .....5.675
Youngstown Y1 .....6.175
SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....6.925
Ecorse,Mich. G5 .....7.475
Fontana,Calif. K1 .....7.875
Gary,Ind. U5 .....6.925
IndianaHarbor,Ind. Y1.7.425
IndianaHarbor,Ind. I-2.6.925
Irvin,Pa. U5 .....6.925
Lackawanna(37) B2 ...6.925
Pittsburgh J5 .....6.925
SparrowsPoint(38) B2..6.925
Warren,O. R2 .....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 .....7.425

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.575
Cleveland J5, R2	4.575
Ecorse,Mich. G5	4.775
Fairfield,Ala. T2	4.575
Follansbee,W.Va. F4	5.575
Fontana,Calif. K1	5.525
Gary,Ind. U5	4.575
GraniteCity,Ill. G4	5.275
Ind.Harbor,Ind. I-2,Y1	4.575
Irvin,Pa. U5	4.575
Lackawanna,N.Y. B2	4.575
Middletown,O. A10	4.575
Pittsburg,Calif. C11	5.525
Pittsburgh J5	4.575
SparrowsPoint,Md. B2	4.575
Steubenville,O. W10	4.575
Warren,O. R2	4.575
Weirton,W.Va. W6	5.775
Youngstown Y1	4.575

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	5.075
Ashland,Ky.(8) A10	5.075
Canton,O. R2	5.075
Delphos,O. N16	5.675
Dover,O. R1	5.775
Fairfield,Ala. T2	5.075
Gary,Ind. U5	5.075
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	5.075
Irvin,Pa. U5	5.075
Kokomo,Ind.(13) C16	5.475
MartinsFerry,O. W10	5.075
Niles,O. N12	6.00
Pittsburg,Calif. C11	5.825
SparrowsPoint,Md. B2	5.075
Steubenville,O. W10	5.075
Torrance,Calif. C11	5.825
Weirton,W.Va. W6	5.075

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.625
SparrowsPoint(39) B2	7.775

SHEETS, Galvannealed Steel

Canton,O. R2	5.625
Irvin,Pa. U5	5.625
Kokomo,Ind.(13) C16	6.025
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.325
Middletown,O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.925
Niles,O. R2 (28)	5.925
Weirton,W.Va. W6	5.775

SHEETS, Drum Body

Pittsburg,Calif. C11	4.475
Torrance,Calif. C11	4.475

SHEETS, Well Casing

Fontana,Calif. K1 (43)	5.10

BLUED Stock, 29 ga.

Yorkville,O. W10	7.00
Follansbee,W.Va. F4	7.10
Follansbee (23) F4	6.425

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.925
Cleveland R2	4.925
Gary,Ind. U5	4.925
GraniteCity,Ill. G4	5.625
Ind.Harbor,Ind. I-2	4.925
Irvin,Pa. U5	4.925
Middletown,O. A10	4.925
Youngstown Y1	4.925

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.05
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.35

SHEETS, Culvert No. 16

	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875	....
Canton,O. R2	5.925	6.375
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5	5.875	6.125
Ind.Harbor I-2	5.875	6.125
Irvin,Pa. U5	5.875	6.125
Kokomo,Ind. C16	6.525	....
MartinsFy.,O. W10	5.875	....
Pittsburg,Cal. C11	6.625	....
SparrowsPt. B2	5.875	....
Torrance,Cal. C11	6.625	....

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	6.125
Fairfield,Ala. T2	6.125
MartinsFerry,O. W10	6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	4.025
Cleveland R2	4.375
Ind.Harbor,Ind. I-2	4.025
Warren,O. R2	4.375

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	5.075
Cleveland R2	5.175
Middletown,O. A10	5.075
Warren,O. R2	5.175

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.325
Canton,O. R2	5.825

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.575
Middletown,O. A10	5.575

SHEETS, ALUMINIZED

Butler,Pa. A10	8.425

TINPLATE, American Coke (Base Box)

	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	...
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R. (22 Ga.) COILS (Cut lengths ½c lower)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10 (cut lengths)	...	...	7.85	9.10	9.90
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	7.55	7.85	(34)	(41)	...
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	...	...	6.75	7.25	...
Vandergrift,Pa. U5	...	...	7.85	8.35	9.60	10.40
Warren,O. R2	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10	..	..	7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95	....	....	....
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.65

SHEET, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

SHEET, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10	5.475
Gary,Ind. U5	5.475
Mansfield,O. E6	6.05
Middletown,O. A10	5.475
Niles,O. N12	6.00
Weirton,W.Va. W6	5.475

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.875

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.30
Fairfield,Ala. T2	5.65
Fontana,Calif. K1	6.55
Gary,Ind. U5	5.65
Ind.Harb.,Ind. I-2	5.65
Ind.Harbor,Ind. Y1	6.15
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	6.40
Seattle B3	6.65
Sharon,Pa. S3	5.65
So.SanFrancisco(25) B3	6.40
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.65
Weirton,W.Va. W6	6.10
Youngstown Y1	6.15
Youngstown U5	5.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	7.45
Cleveland A7	7.30
Dover,O. G6	8.00
Ecorse,Mich. G5	8.15
Lackawanna,N.Y. B2	7.90
Sharon,Pa. S3	7.30
SparrowsPoint,Md. B2	7.90
Warren,O. R2	7.30
Weirton,W.Va. W6	7.95
Youngstown Y1	7.80

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.725
Alton,Ill. L1	4.20
Ashland,Ky.(8) A10	3.725
Atlanta A11	4.275
Bessemer,Ala. T2	3.725
Bridgeprt,Conn.(10) S15	4.225
Buffalo(27) R2	3.725
Butler,Pa. A10	3.725
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	4.125
Detroit M1	4.40
Ecorse,Mich. G5	4.025
Fairfield,Ala. T2	3.725
Fontana,Calif. K1	4.975
Gary,Ind. U5	3.725
Houston,Tex. S5	4.90
Ind.Harbor,Ind. I-2,Y1	3.725
Johnstown,Pa.(25) B2	3.725
KansasCity,Mo.(9) S5	4.10
Lackaw'na,N.Y.(32) B2	3.725
LosAngeles(25) B3	4.475
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.775
NewBritain(10) S15	4.225
N.Tonawanda,N.Y. B11	3.725
Pittsburg,Calif. C11	4.475
Riverdale,Ill. A7	3.725
SanFrancisco S7	*5.00*
Seattle B3	4.725
Seattle N14	*4.75*
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	3.725
So.SanFrancisco(25) B3	4.475
SparrowsPoint,Md. B2	3.725
Sterling,Ill. N15	4.725
Torrance,Calif. C11	4.475
Warren,O. R2	3.725
Weirton,W.Va. W6	3.825
WestLeechburg,Pa. A4	3.75
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	6.05
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	7.30
Gary,Ind. U5	6.10
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10
Midland,Pa. C18	5.85
NewBritn,Conn.(10) S15	6.05
Sharon,Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	5.80
Butler,Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn,Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	5.30
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	6.75
FranklinPark,Ill.(40) T6	5.35
Ind.Harbor,Ind. I-2	5.35
Lackawanna,N.Y. B2	5.10
LosAngeles C1	6.40
Mattapan,Mass. T6	5.95

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	....	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1	....	....	8.55	10.50	....
Carnegie,Pa. S18	....	6.80	7.40	9.35	11.65
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50	....	....
Detroit D2	6.45	7.50	8.10	....	....
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	....	....	7.70	9.65	11.95
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	....	5.80	7.65	8.25	10.20	....
NewCastle,Pa. E5	*5.80*	*7.65*	*8.25*	*10.20*	*12.50*
NewHaven,Conn. D2	6.70	7.60	8.20	....	....
NewYork W3	....	7.95	8.55	10.50	12.80
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	....	7.65	8.25	10.20	12.50
Worcester,Mass.,Base.	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5	....	7.95	8.55	10.50	12.80
Wallingford,Conn. W2	6.30	7.60	8.20	10.15	12.65
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	3.55	10.50	12.80
Youngstown C8	....	6.80	7.40	9.35	11.65

Spring Steel (Tempered)

Trenton,N.J. R5 (29)	....	....	10.30	12.50	15.35
Harrison,N.J. C18	....	....	10.30	12.50	15.35
NewYork W3	....	....	10.30*	12.50*	15.35*

* Plus $1.575 per 100 lb.

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.25
Weirton,W.Va. W6	5.10
Youngstown C8	5.25

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	12.15
Carnegie,Pa. S18	10.60
Cleveland A7	11.40
Dover,O. G6	11.90
Fontana,Calif. K1	13.05
Harrison,N.J. C18	10.60
Midland,Pa. C18	10.60
NewBritn.Conn.(10) S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown C8	10.60

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.975
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet.
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H.K. Porter Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	6.075	6.325
Aliquippa J5	5.70	6.15
Atlanta A11	6.325	6.675
Bartonville(19) K4	6.075	6.45
Buffalo W12	4.85	...
Cleveland A7	6.075	6.45*
Crawfordsville M8	6.175	6.55
Donora,Pa. A7	6.075	6.45*
Duluth,Minn. A7	6.075-6.45*	
Fairfield T2	6.075	6.45*
Houston,Tex. S5	6.10	6.55
Johnstown B2	6.075	6.45
Joliet,Ill. A7	6.075	6.45*
KansasCy,Mo. S5	6.30	6.75
Kokomo C16	6.175	6.425
LosAngeles B3	7.025	...
Minnequa C10	6.325	6.70*
Monessen P7	5.95	6.40
Palmer W12	5.15	...
Pitts.,Calif. C11	7.025	7.40*
Prtsmth.(18)P12	6.475	...
Rankin A7	6.075	6.45*
So.Chicago R2	6.075	6.325
So.S.Fran. C10	7.025	7.40*
SparrowsPt. B2	6.175	6.55
Sterling,Ill.(1)N15	6.075	6.45
Struthers,O. Y1	6.075	6.475
Torrance,Cal. C11	7.025	...
Worcester A7	6.375	6.75*

*Based on 14-cent zinc.

ROPE WIRE (A)
(Add 4.7% on base and extras)

Alton,Ill. L1	9.15
Bartonville,Ill. K4	8.95
Buffalo W12	8.55
Fostoria,O. S1	8.85
Johnstown,Pa. B2	8.55
Monessen,Pa. P16	8.55
Monessen,Pa. P7	8.80
Muncie,Ind. I-7	8.75
Palmer,Mass. W12	8.85
Portsmouth,O. P12	8.55
Roebling,N.J. R5	8.85
SparrowsPt. B2	8.65
Struthers,O. Y1	8.55
Worcester J4, T6	8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	5.225
Aliquippa,Pa. J5 (42)	4.85
Atlanta A11	5.475
Alton,Ill. L1	5.45
Bartonville,Ill. K4	5.325
Buffalo W12	4.85
Chicago W13	*5.475*
Cleveland A7, C20	5.225
Crawfordsville,Ind. M8	5.325
Donora,Pa. A7	5.225
Duluth,Minn. A7	5.225
Fairfield,Ala. T2	5.225
Fostoria,O.(24) S1	5.725
Houston S5	5.25
Johnstown,Pa. B2	5.225
Joliet,Ill. A7	5.225
KansasCity,Mo. S5	5.45
Kokomo,Ind. C16	5.325
LosAngeles B3	6.175
Minnequa,Colo. C10	5.475
Monessen,Pa. P7	5.10
Newark 6-8 ga. I-1	5.88
No.Tonawanda B11	5.225
Palmer,Mass. W12	5.15
Pittsburg,Calif. C11	6.175
Portsmouth,O. P12	5.625
Rankin,Pa. A7	5.225
So.Chicago,Ill. R2	5.225
So.SanFrancisco C10	6.175
SparrowsPoint,Md. B2	5.325
Sterling,Ill.(1) N15	5.225
Struthers,O. Y1	5.225
Torrance,Calif. C11	6.175
Waukegan,Ill. A7	5.225
Worcester,Mass. A7	5.525

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo W12	6.35
Cleveland A7 (43)	5.85
Crawf'sville,Ind. M8(43)	5.85
Dover,O. G6	6.20
Fostoria,O. S1 (43)	6.00
Kokomo,Ind. C16 (43)	5.70
FranklinPark,Ill. T6(43)	6.20
Massillon,O. R8 (43)	5.85
Monessen,Pa. P16 (43)	6.35
Monessen,Pa. P7	6.10
Pawtkt,R.I.(12) N8 (43)	6.85
Trenton,N.J. R5 (43)	6.15
Worcester,Mass. A7(43)	6.15
Worcester,Mass. W12	6.65
Worcester,Mass. T6(43)	6.50

WIRE, Galv'd ACSR for Cores

	Anl'd.	Galv.
Bartonville,Ill. K4	8.90	
Monessen,Pa. P16 (43)	8.50	
Muncie,Ind. I-7 (43)	8.70	
Roebling,N.J. R5 (43)	8.80	
SparrowsPt.,Md. B2 (43)	8.60	
Johnstown,Pa. B2 (43)	8.50	

WIRE (16 gage) Stone (Add 4.7% on base and extras) **Stone**

Aliquippa J5	10.15 12.15
Bartonville(19)K4	10.25 ....
Cleveland A7	10.25 12.00*
Crawfrdsville M8	10.25 12.00
Fostoria,O. S1	10.40 13.00
Johnstown B2	10.25 12.15*
Kokomo C16	*10.625† 12.325†*
Minnequa C10	10.40 12.425*
Palmer,Mass. W12	10.25 12.15
Pitts.Cal. C11	10.60 12.35*
SparrowsPt., B2	10.35 12.25*
Waukegan A7	10.25 12.00*

*Based on 14-cent zinc. †Includes 4.7% increase.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	6.25
Alton,Ill. L1	6.85
Bartonville,Ill. K4	6.64
Buffalo W12	6.25
Cleveland A7 (43)	6.25
Donora,Pa. A7 (43)	6.25
Duluth,Minn. A7 (43)	6.25
Fostoria,O. S1 (43)	6.25
Johnstown,Pa. B2 (43)	6.25
Millbury,Mass.(12) N6	8.05
Minnequa,Colo. C10(43)	6.50
Monessen,Pa. P7, P16	6.25
Muncie,Ind. I-7 (43)	6.45
Palmer,Mass. W12	6.55
Pittsburg,Calif. C11(43)	7.20
Roebling,N.J. R5 (43)	6.55
Portsmouth,O. P12(43)	6.25
So.Chicago,Ill. R2 (43)	6.25
So.SanFran. C10 (43)	7.20
SparrowsPt.,Md. B2 (43)	6.35
Struthers,O. Y1 (43)	6.25
Trenton,N.J. A7 (43)	6.55
Waukegan,Ill. A7 (43)	6.25
Worcester A7, T6, W12	6.55
Worcester,Mass. J4	6.75

WIRE, Tire Bead

Bartonville,Ill. K4	11.51
Monessen,Pa. P16 (43)	11.40
Roebling,N.J. R5 (43)	11.55

WIRE, Fine & Weaving (8"Coils)

Bartonville,Ill. K4	9.42
Buffalo W12	8.90
Chicago W13	*9.32*
Cleveland A7 (43)	8.90
Crawf'sville,Ind. M8(43)	8.90
Fostoria,O. S1 (43)	8.90
Johnstown,Pa. B2 (43)	8.90
Kokomo,Ind. C16 (43)	8.90
Monessen,Pa. P16 (43)	8.90
Muncie,Ind. I-7 (43)	9.10
Palmer,Mass. W12	9.20
Roebling,N.J. R5 (43)	9.20
Waukegan,Ill. A7 (43)	8.90
Worcstr,Mass. A7,T6(43)	9.20

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	144
Aliquippa,Pa. J5	142
Atlanta A11	149
Bartonville,Ill.(19) K4	147
Crawfordsville,Ind. M8	*149*
Donora,Pa. A7	147*
Duluth,Minn. A7	147*
Fairfield,Ala. T2	147*
Houston,Tex. S5	149
Johnstown,Pa. B2	146
Joliet,Ill. A7	147*
KansasCity,Mo. S5	153
Kokomo,Ind. C16	149
Minnequa,Colo. C10	153*
Monessen,Pa. P7	146
Pittsburg,Calif. C11	167*
Rankin,Pa. A7	147*
So.Chicago,Ill. R2	144
So.SanFran.,Calif. C10	167*
SparrowsPoint,Md. B2	148
Sterling,Ill.(1) N15	147

*Based on 14-cent zinc

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.90
Alton,Ill. L1	6.50
Buffalo W12	5.90
Cleveland A7	6.275
Donora,Pa. A7	6.275
Duluth,Minn. A7	6.275
Johnstown,Pa. B2	6.275
Los Angeles B3	7.225
Minnequa,Colo. C10	6.525
Monessen,Pa. P7	5.90
Monessen,Pa. P16(42)	6.40
NewHaven,Conn. A7	6.575
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	7.225
Portsmouth,O. P12	6.275
Roebling,N.J. R5	6.575
So.Chicago,Ill. R2	6.275
So.SanFrancisco C10	7.225
SparrowsPoint,Md. B2	6.375
Torrance,Calif. C11	7.225
Trenton,N.J. A7	6.575
Waukegan,Ill. A7	6.275
Worcester,Mass. A7	6.575

WOVEN FENCE,9-15½ Ga. Col.

AlabamaCity,Ala. R2	135
Ala.City,Ala.,17-18ga.R2	222
Aliquippa,Pa.9-14½ga.J5	131
Atlanta A11	140
Bartonville,Ill.(19) K4	138
Crawfordsville,Ind. M8	140
Donora,Pa. A7	138*
Duluth,Minn. A7	138*
Fairfield,Ala. T2	138*
Houston,Tex. S5	139
Johnstown,Pa. B2	138
Johnstown,17ga.,6" B2	229
Joliet,Ill. A7	138*
KansasCity,Mo. S5	143
Kokomo,Ind. C16	140
Minnequa,Colo. C10	146*
Monessen,Pa. P7	136
Pittsburg,Calif. C11	161*
Rankin,Pa. A7	138*
So.Chicago,Ill. R2	135
Sterling,Ill.(1) N15	138

*Based on 14-cent zinc

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	132
Atlanta A11	135
Bartonville,Ill.(19) K4	132
Crawfordsville,Ind. M8	134
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S5	135
Kokomo,Ind. C16	134
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10	156
SparrowsPoint,Md. B2	134
Sterling,Ill.(1) N15	132

FENCE POSTS

ChicagoHts.,Ill. C2	140
Duluth,Minn. A7	133
Franklin,Pa. F5	140
Huntington,W.Va. W7	*148*
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12	*148*
Williamsport,Pa. S19	158

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.85
Lebanon,Pa.(31) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh O3, P14	9.85

AXLES

Ind.Harbor,Ind. S13	5.65
Johnstown,Pa. B2	5.65

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2 (44)	118
Aliquippa,Pa. J5	118
Atlanta A11	130
Bartonville,Ill.(19) K4	127
Chicago,Ill. W13	*127*
Cleveland A9	125
Crawfordsville,Ind. M8	130
Donora,Pa. A7	127
Duluth,Minn. A7	127
Fairfield,Ala. T2	127
Galveston,Tex. D7(44)	*126*
Houston,Tex. S5	126
Johnstown,Pa. B2 (44)	118
Joliet,Ill. A7	127
KansasCity,Mo. S5	130
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (44)	123
Monessen,Pa. P7	124
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Rankin,Pa. A7	127
So.Chicago,Ill. R2	118
SparrowsPoint,Md.B2(44)	120
Sterling,Ill.(1) N15	127
Torrance,Calif. C11	147
Worcester,Mass. A7	133

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2 (44)	118
Atlanta A11	129
Bartonville,Ill. (19) K4	127
Crawfordsville,Ind. M8	*128*
Chicago W13	*127*
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Johnstown,Pa. B2 (45)	118
Joliet,Ill. A7	126
Kokomo,Ind. C16	*128*
Minnequa,Colo. C10 (45)	123
Pittsburg,Calif. C11	145
Portsmouth,O. P12	132
Rankin,Pa. A7	126
SparrowsPoint,Md.B2(45)	129
Sterling,Ill.(1) N15	126
Torrance,Calif. C11	146
Worcester,Mass. A7	133

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3	$7.80
Wheeling,W.Va. W10	7.80

TIE PLATES

Fairfield,Ala. T2	4.775
Gary,Ind. U5	4.775
Ind.Harbor,Ind. I-2	4.775
Lackawanna,N.Y. B2	4.775
Minnequa,Colo. C10.	$95.50*
Pittsburg,Calif. C11	4.925
Seattle B3	4.925
Steelton,Pa. B2	4.775
Torrance,Calif. C11	4.925

*Per net ton.

JOINT BARS

Bessemer,Pa. U5	4.925
Fairfield,Ala. T2	4.925
Ind.Harbor,Ind. I-2	4.925
Joliet,Ill. U5	4.925
Lackawanna,N.Y. B2	4.925
Minnequa,Colo. C10	4.925
Steelton,Pa. B2	4.925

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.65
KansasCity,Mo. S5	6.40
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh J5	6.65
Seattle B3	7.15
So.Chicago,Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown R2	6.65

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	...	...	...	...
Ensley,Ala. T2	3.775	3.675	3.725	4.25
Fairfield,Ala. T2	3.775	...	...	4.25
Gary,Ind. U5	...	...	...	4.25
Huntington,W.Va. W7	3.775	3.675	3.725	...
IndianaHarbor,Ind. I-2	...	...	...	*5.25*
Johnstown,Pa. B2	3.775	3.675	3.725	...
Lackawanna,N.Y. B2	...	...	...	(16)4.25
Minnequa,Colo. C10	3.775	3.675	...	4.25
Steelton,Pa. B2	$75.50*	$73.50*	...	...
Williamsport,Pa. S19	3.775	3.675	...	...
	...	...	...	5.00

* Per net ton.

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.65-1.66
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.460
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025
9	3.25	0.5	....	1.01

W	Cr	V	Mo	
6.4	4.5	1.9	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.85c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Add $31.50 per ton.
(30) Sheared: add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.85c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb.

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sisco-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

REPUBLIC CONVEYOR BELT SAVES HANLEY COMPANY 93% belt replacement cost.

● Hanley Company operates a modern tile and brick-making plant in Summerville, Pa. Basic ingredient of their product is hard, abrasive fire clay. The clay is dumped into a primary crusher at the tipple, and then moved on Republic Conveyor Belting to a scalping screen, where the fines are separated from coarser lumps and dropped into storage bins preparatory to pugging, extrusion and baking.

A single 504-ft. length of 20-inch wide Republic Super Excelo Conveyor Belt handled the entire job (carrying more than 1,625,000 tons of material without mishap) for a 10-year period. Then, in July of 1948, the company installed some new production equipment and the old conveyor system became 18 feet too short. It seemed like an ideal time for belt replacement, but —

"Nothing doing!" said Charles E. Bates, Vice-president in Charge of Production. "The original belt had a perfect performance record and was in excellent condition. Ten years' service out of a Republic Belt didn't seem unusual. I simply ordered an extra 36-foot section of the same type Super Excelo Belting and had it spliced in position. That was four years ago. I saved 93% of the total replacement cost and the belt's still rolling along as good as ever!"

Yes, Mr. Bates, we expect it is. Many Republic Rubber Conveyor Belts and other Industrial Rubber Products have been in use for a quarter of a century and more. But we appreciate such loyalty and enthusiasm. As the leading specialized producer of Industrial Rubber Products, Republic will continue to offer more performance for less money.

Remember, if it's made of rubber, Republic builds it better. Contact your local Republic Distributor or write direct for a free analysis of your plant requirements.

INDUSTRIAL RUBBER PRODUCTS BY
REPUBLIC RUBBER DIVISION
Lee Rubber & Tire Corporation
YOUNGSTOWN, OHIO

STANDARD PIPE, T & C

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	30.5	28.5	...	1.25	+0.75	....
¼	6.0	0.42	25	23	...	+1.75	+3.75	....
⅜	6.0	0.57	20	18	...	+5.5	+7.5	....
½	8.5	0.85	32.5	30.5	31.5	13.25	11.25	12.25
¾	11.5	1.18	35.5	33.5	34.5	17.25	15.25	16.25
1	17.0	1.68	38	36	37	20.75	18.75	19.75
1¼	23.0	2.28	38.5	36.5	37.5	20.5	18.5	19.5
1½	27.5	2.78	39	37	38	21.5	19.5	20.5
2	37	3.68	39.5	37.5	38.5	22	20	21
2½	58.5	5.82	40	38	39	21.75	19.75	20.75
3	76.5	7.62	40	38	39	21.75	19.75	20.75

Column A: Etna, Pa. N2 and 33% on 3½", 4"; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1 point lower on ⅛", 1¾ points lower on ¼", and 2¼ points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜".

Following make ½" and larger: Lorain, O. N3; Youngstown R2 and 33% on 3½" and 4"; Youngstown Y1. Fontana, Calif. K1 quotes 11½ points lower on ⅛" and larger continuous weld and 20.5% on 3½" and 4".

Column B: Sparrows Point, Md. B2; Wheatland, Pa. 2 points higher on ⅛" through 3" W9.

Column C: Indiana Harbor, Ind., Y1; Alton, Ill., 2 points lower L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus ¼% on ⅛", plus 3½% on ¼", plus 7¾% on ⅜" and 14¼% on 3½", 4".

Etna, Pa. N2 and 14¼% on 3½", 4". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 14¼% on 3½" and 4"; Youngstown Y1; Fontana, Calif. K1 quotes 11½ points lower.

Column E: Sparrows Point, Md. B2; Wheatland, Pa. 2 points higher on ⅛", 1 point higher on ¾", ½ point on 1¼", 2½" and 3" W9.

Column F: Indiana Harbor, Ind. Y1; Alton, Ill. 1¾ points lower on ½", ¾" and 1", 1 point lower on 1¼", 1½" and 2", ¼ point lower on 2½" and 3" L1.

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	24	6	24	6
2½	58.5	5.82	27	8.25	27	8.25
3	76.5	7.62	27	8.25	27	8.25
3½	92.0	9.20	29	10.25	29	10.25
4	$1.09	10.89	29	10.25	29	10.25
5	1.48	14.81	33.75	15	33.75	15
6	1.92	19.18	33.75	15	33.75	15

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Lorain N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	14.19	17.37	16.20	16.20
1¼	13	16.97	20.79	16.46	19.19
1½	13	18.22	22.31	18.19	21.41
1¾	13	20.35	24.92	20.69	24.35
2	13	22.81	27.94	23.19	27.28
2¼	13	25.69	31.46	25.84	30.42
2¼	12	28.40	34.78	28.46	33.50
2½	12	31.28	38.31	31.19	36.67
2¾	12	33.87	41.49	33.05	38.86
3	12	35.78	43.93	34.69	40.82

CLAD STEELS

(Cents per pound; subject to 4.7% increase on base price and extras)

Cladding Stainless	Plates — Carbon Base 10%	Plates — Carbon Base 20%	Strip Cold-Rolled Carbon Base Both Sides 10%	Strip Cold-Rolled Carbon Base Both Sides	Sheets — Carbon Base 10%	Sheets — Carbon Base 20%	Cu Base Both Sides
302 ...	....	....	....	....	19.75	26.24–27.50	77.00
304 ...	25.00	29.50	....	....	24.50	27.50–27.77	77.00
309 ...	30.50	35.00	....	....	....	....	....
310 ...	36.50	41.00	....	....	....	....	144.00
316 ...	29.50	34.00	....	....	26.00	35.92–36.50	....
317 ...	34.50	39.00	....	....	....	....	....
318 ...	33.50	38.00	....	....	....	....	....
321 ...	26.50	31.00–32.00	....	....	23.00	33.00	111.00
347 ...	27.50	32.00	....	....	24.00	33.50–33.83	130.00
405 ...	21.25	27.75	....	....	....	....	....
410 ...	20.75	27.25	....	....	....	....	....
Nickel .	33.55	45.15	41.00	54.00	....	....	....
Inconel.	41.23	54.18	....	....	....	....	165.00
Monel..	34.93	46.28	....	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	44.00	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:

½-in. & smaller diam.	15
⅝-in. & ⅞-in.	18.5
1-in. and larger	17.5
Longer than 6 in.:	
All diams.	14
Lag bolts, all diams.:	
6 in. and shorter	23
over 6 in. long	21
Ribbed Necked Carriage	18.5
Blank	34
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire bolts	21
Boiler & Fitting-Up Bolts	31

NUTS

H.P. & C.P.	Reg.	Hvy.
Square:		
½-in. & smaller	15	15
⅝-in. & ⅞-in.	12	6.5
1-in.-1½-in.	9	1
1⅝-in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅞-in.	16.5	6.5
1-in.-1½-in.	12	2
1⅝-in. & larger	8.5	2
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅞-in.	23	17.5
1-in. & 1⅛-in.	19.5	12
1⅜-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	35	28.5
⅝-in. & ⅞-in.	29.5	22
¾-in.-1½-in.	24	15
1⅝-in. & larger	18	8.5
	Light	
⅞-in. & smaller	35	
1-in. to ⅞-in.	28.5	
¾-in. to 1½-in.	26	

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	48 & 10
Plated finishes	31 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged: per cent off list)

6 in. or shorter:	
⅝-in. & smaller	42
¾-in. through 1 in.	34
Longer than 6 in.:	
⅝-in. & smaller	26
¾-in. through 1 in.	4

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	38
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	35
¼-in. diam. & larger	16
N.F. thread, all diams.	10

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.85c

⅞-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers—List to list-plus-$1

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Inches Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.25	36.75	31.50
303...	43.25	40.25	34.00
304...	43.25	38.75	33.00
309...	56.00	55.00	44.75
316...	57.00	59.00	49.25
321...	49.25	48.25	37.00
347...	53.75	52.25	41.50
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Balt., Types 301-347 and 430 sheets, except 303 and 309 E2.

Brackenridge, Pa., sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

COAL, CHEMICALS

Spot, cents per gallon, ovens

Pure benzol 30.00-35.00

Toluol, one deg... 26.00-33.00

Industrial xylol .. 25.00-33.50

Per ton bulk ovens

Sulphate of ammonia. $32-$45

Cents per pound, ovens

Phenol, 40 (carlots, non-returnable drums) ... 17.25

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron:	Cents
98+% Fe, annealed.	18.00
Unannealed	14.50
Swedish, c.i.f. New York, in bags.	8.85-9.95
Electrolytic iron:	
Annealed, 99.5% Fe.	42.50
Unannealed (99 + % Fe)	36.50
Unannealed, 99 + % Fe (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns ..	83.00-148.00
Aluminum:	
Cariots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	33.00
Antimony, 500 lb lots.	71.00
Brass, 20-ton lots.	28.25-32.00
Bronze, 10-ton lots	51.25-60.00
Phosphor-Copper, 20-ton lots	50.00
Copper:	
Electrolytic	37.25
Reduced	34.75
Lead	22.50
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5-ton lots	44.50
Silicon	38.50
Solder (plus cost of metal)	8.50
Stainless Steel, 302....	83.00
Zinc, 10-ton lots.	20.00-28.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over....	5.85
Less than 1000 lb ..	6.00
Molybdenum: 99.9%, minus 200 mesh	3.24
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS

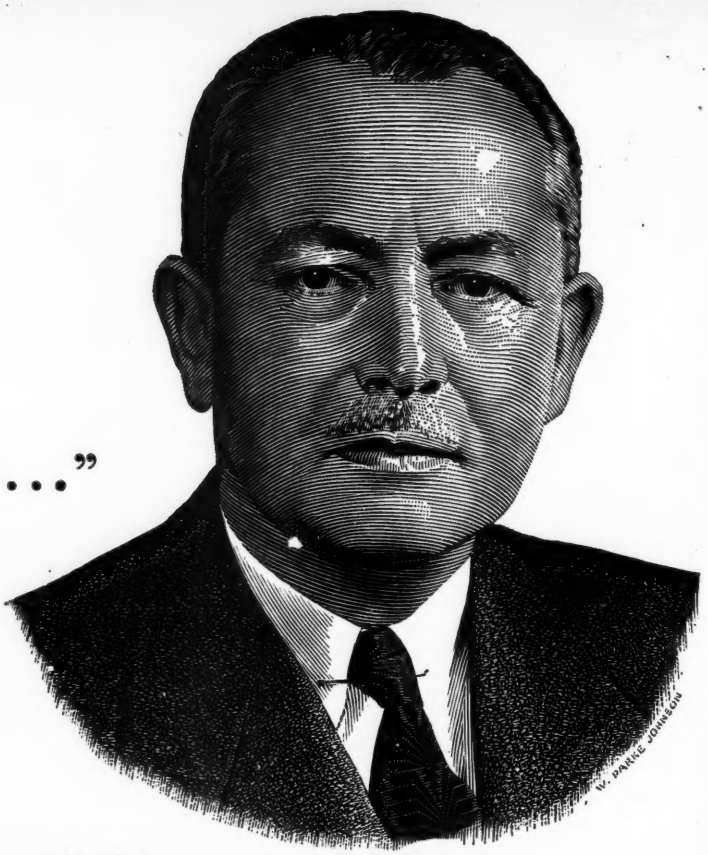
Connellsvll.fur.	$14.50-15.00
Connellsvll.fdy.	16.50-17.50
New River foundry....	20.80
Wise county, foundry..	15.95
Wise county, furnace..	15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens.	$22.75
Everett, Mass., ovens	
New England, del...	*24.80
Chicago ovens	23.00
Chicago, del.	24.50
Terre Haute, ovens....	22.50
Milwaukee, ovens	23.75
Indianapolis, ovens ...	22.75
Chicago, del.	26.62
Cincinnati, del.	25.85
Detroit, del.	27.05
Ironton, O., ovens	22.50
Cincinnati, del.	25.12
Painesville, O., ovens.	24.00
Cleveland, del.	25.82
Erie, Pa., ovens	23.50
Birmingham, ovens ..	20.30
Cincinnati, del.	25.23
Philadelphia, ovens ...	22.70
NevilleIsland,Pa.,ovens	23.00
Swedeland, Pa., ovens.	22.60
St. Louis, ovens	
St. Louis, del.	25.40
Portsmouth, O., ovens	22.50
Cincinnati, del.	25.12
Detroit, ovens	24.00
Detroit, del.	25.00
Buffalo, del.	26.58
Flint, del.	26.73
Pontiac, del.	25.56
Saginaw, del.	27.08

*Or within $4.55 freight zone from works.

"... opportunity is freely given..."



PAUL M. HAHN
President, The American Tobacco Co.

"Our nation has grown great largely because opportunity is freely given. Only very few people actually make their own 'breaks.' Today, millions of Americans are providing for their personal financial security and at the same time helping in the building of our national defenses. The opportunity to do so is given by business management which affords employees the means of practicing systematic thrift through the Payroll Savings Plan for the purchase of U. S. Defense Bonds."

Nearly seven million employees of industry are "providing for their personal security and at the same time helping in the building of our national defenses."

- they are the men and women who availed themselves of the opportunity referred to by Mr. Hahn—the opportunity to enroll in the Payroll Savings Plan for the systematic purchase of U.S. Defense Bonds.
- they represent a high percentage of their companies' employees—in plant after plant, the averages are climbing to 60%, 70%, 80%—even higher.
- their investment in Defense Bonds—and America—add up to $140 million per month.
- they constitute a large block of the men and women who on December 31, 1951, held Series E Bonds amounting to $34,727,000,000—$4.8 billions more than the cash value of Series E's outstanding in August, 1945.

Not far from you is a State Director of the Savings Bond Division. He will be glad to tell you how easy it is to give your employees a Payroll Savings Plan. Or, if you already offer the Plan to your people, he will show you how to conduct a simple person-to-person canvass of your plant—a canvass intended to do only one thing—to put a Payroll Savings Application Blank in the hands of every man and woman on your payroll. Your employees will do the rest.

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STEEL
The Weekly Magazine of Metalworking

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140††[3]		Carbon	Floor
New York (city)	6.65	7.57	8.77	7.05	...	6.89	7.83	11.34‡	6.69	6.90	8.31
JerseyCty(c'try)	6.35	7.27	8.47	6.75	...	6.59	7.53	9.54	6.39	6.60	8.01
Boston (city) ..	6.71	7.55	8.74	6.75	...	6.48	7.74‡	10.80§	6.76	7.00	8.18
Boston (c'try)..	6.51	7.35	8.54	6.55	...	6.28	7.54‡	10.60§	6.56	6.80	7.98
Phila. (city) ...	6.35	7.38	8.60	6.70	8.55	6.67	7.69	11.02	6.42	6.49	7.62
Phila. (c'try) ..	6.10	7.12	8.35	6.45	8.30	6.42	7.44	10.77	6.17	6.24	7.36
Balt. (city) ...	6.01	7.37	8.62	6.62	...	6.61	7.62‡	11.37	6.52	6.67	7.90
Balt. (c'try) ..	5.81	7.17	8.42	6.42	...	6.41	7.42‡	11.17	6.33	6.47	7.70
Norfolk, Va. ..	7.60	...	...	...	...	6.44	8.45	...	7.25	6.64	7.33
Richmond, Va. .	6.14	6.95	8.68	6.53	...	6.30	7.38	...	6.58	6.68	7.80
Wash. (w'hse)..	6.31	7.61	8.90	6.89	...	6.90	7.78	...	6.93	6.95	8.17
Buffalo (del.)..	6.00	6.85	8.66	6.41	...	6.10	7.68‡	12.27	6.28	6.50	7.87
Buffalo (w'hse).	5.80	6.65	8.46	6.21	...	5.90	7.48‡	12.07	6.08	6.30	7.67
Pitts. (w'hse)..	5.80	...	8.45	5.97	...	5.83	6.90	10.65	5.95	6.12	7.18
Detroit (w'hse).	6.00-6.20	6.71-7.04	8.34	6.03-7.05	7.70-8.03	6.12-6.34	6.975-7.41	10.92	6.42-6.65	6.19-6.65	7.52-7.72
Cleveland (del.)	6.00	6.85	8.39	6.20	...	6.09	7.19‡	10.99	6.53	6.37	7.72
Cleve. (w'hse) .	5.80	6.65	8.19	6.00	...	5.89	6.99‡	10.79	6.33	6.17	7.52
Cincin. (city) ..	6.28	6.87	8.67	6.36	...	6.28	7.31	12.22	6.57	6.62	7.75
Chicago (city)..	6.03	6.88	8.25	6.03	...	6.11	7.12‡	10.85	6.15	6.22	7.38
Chicago (w'hse)	5.83	6.68	8.05	5.83	...	5.91	6.92‡	10.65	5.95	6.02	7.18
Milwau. (city) .	6.17	7.08	8.42	6.51	...	6.20	7.30‡	10.02	6.32	6.37	7.55
Milwau. (c'try).	5.97	6.88	7.22	6.31	...	6.00	7.10‡	10.82	6.12	6.17	7.35
St. Louis (del.)	6.30	7.15	8.55	6.68	...	6.33	7.40‡	11.15	6.55	6.60	7.78
St. L. (w'hse) .	6.10	6.95	8.35	6.48	...	6.13	7.20‡	10.95	6.35	6.40	7.58
Birm'hm (city).	5.95	6.80	7.85[2]	5.95	...	5.95	8.40	...	6.10	6.25	8.65
Birm'hm(w'hse)	5.80	6.65	7.70[2]	5.80	...	5.80	8.40	...	5.95	6.10	8.65
Los Ang. (city).	6.78	8.65[3]	9.95	6.94	...	6.77	8.84	12.25	6.84	6.91	9.10
L. A. (w'hse)..	6.58	8.45[3]	9.75	6.74	...	6.57	8.64	12.05	6.64	6.71	8.90
Seattle-Tacoma.	7.43	9.26	9.55	7.90	...	7.40	9.56	10.90§	6.83	7.24	9.07
SanFran.(w'hse)	6.85	8.20[3]	9.55[3]	6.80	...	6.65	8.70	12.05	6.50	6.55	8.90

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ add 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb.; [4]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports. After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in applicable lake vessel rates, upper lake rail, freights, dock handling charges and taxes thereon.

Old range bessemer	$9.45
Old range nonbessemer	9.30
Mesabi bessemer	9.20
Mesabi nonbessemer	9.05
High phosphorus	9.05

Eastern Local Ore

Cents per unit del., E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%: Spot	nom.
Long-term contract	24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	32.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$39.00-42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00

South African Transvaal

44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00

Brazilian

44% 25:1 lump	nom.

Rhodesian

45% no ratio	$29.00
48% no ratio	31.50-32.00
48% 3:1 lump	50.00-51.00

Domestic—rail nearest seller

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy, c.l. packed $237; gross ton lots, packed, $252; less gross ton lots, packed $269; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, or Marietta, O. Base price: $227, Johnstown, Pa.; $225, Sheridan, Pa., Lynchburg, Va.; $228, Etna, Pa.; $226, Anaconda, Mont.

Shipment from Pacific Coast warehouses by one seller, add $33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 40,000 lb or more, 30c; 2000 to 39,999 lb, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65 - 68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, Add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract, $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max., C 0.4% max). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton lot 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ⅛" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal. Fe) Lump, carload bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14, in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

Note: For current prices on chromium, silicon, vanadium, boron and tungsten alloys see page 137, Sept. 1 issue; calcium, zirconium, briquetted alloys and refractories, page 165, Sept. 8 issue.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Sept. 11	$43.00
Sept. 4	43.00
Aug., 1952	43.00
Sept., 1951	44.00
Sept., 1947	37.83

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Basing Point	Grade 1 No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grade

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00

Cut Structurals & Plate:

16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base

Foundry, Steel:

20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats.	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches.	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3. oversize	Base
27. Steel Wheels, No. 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.

For preparing into:

(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable).	45.00
4. No. 4. (Burnt Cast)	41.00
5. Cast Iron Brake Shoes.	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop broken machinery.	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham
(Delivered)

No. 1 Cupola Cast	$45.00-46.00
Stove plate	41.00-42.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	40.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 cupola cast	45.00-46.00
No. 1 machinery cast	46.50-47.50

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings.	33.50
Mixed borings, turnings	37.50
Shoveling turnings	37.50
Cast iron borings	37.50
No. 1 cupola cast	49.00-51.00
Charging box cast	47.00-48.00
Heavy breakable	47.00-48.00
Burnt cast	41.00-42.00
Cast iron brake shoes.	42.00-43.00
Stove plate	45.00-47.00
Clean auto cast	55.00-56.00
Unstripped motor blocks	39.00-40.00
Malleable	60.00-61.00
Drop broken machinery	55.00-57.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00

(F.o.b. shipping point)

No. 1 cupola	49.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	43.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	49.00†
Heavy breakable	45.00†
Clean auto cast	52.00†
Unstripped motor blocks	43.00†
Drop broken machinery	52.00†
Charging box cast	47.00†

†Ceiling price.

Los Angeles
(Delivered)

No. 2 bundles	29.00
No. 1 cupola cast	42.00-44.00

New York
(Brokers' buying prices)

No. 2 heavy melting	35.99
Mixed borings, turnings	29.99
Machine shop turnings.	25.99
Cupola cast	42.00-43.00
Unstripped motor blocks	36.00-37.00

Philadelphia

No. 1 heavy melting	41.50†
No. 2 heavy melting	41.50†
No. 1 bundles	42.50†
No. 2 bundles	41.50†
No. 1 busheling	42.50†
Mixed borings, turnings	36.50†
Machine shop turnings.	32.50†
Short shoveling turnings	36.50†
No. 1 cupola cast	46.00-48.00††
Unstripped motor blocks	41.00††
Heavy breakable	45.00†
Machinery cast	52.00†

†Ceiling price. ‡Nominal.
$Shipping point. ††Delivered.

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00†
No. 1 bundles	45.00†
No. 2 bundles	44.00†
Machine shop turnings.	35.00†
Shovel turnings	39.00†
No. 1 cupola cast	48.50
Heavy breakable	45.00

†Ceiling price.

San Francisco
(Delivered)

No. 2 heavy melting	31.00
Machine shop turnings.	18.00
No. 2 bundles	30.00
No. 1 cupola cast	46.00

Seattle
(F.o.b. shipping point)

No. 1 cupola cast	44.00
Heavy breakable	40.00
Unstripped motor blocks	38.00

St. Louis
(Delivered)

No. 1 cupola	41.00
Unstripped motor blocks	39.00

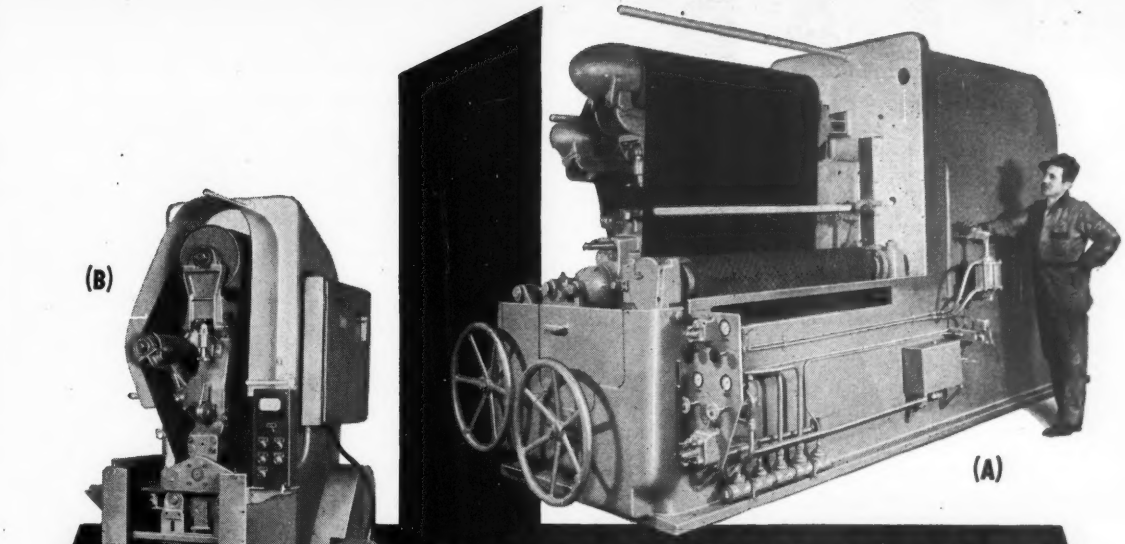
Youngstown
(Delivered)

No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings.	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt.	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	32.00
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	32.50
Rails, Remelting	35.50
Rails, Rerolling	44.80
Busheling	30.00
Busheling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	32.50
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

† F.o.b., shipping point.



IF THE STOCK IS FLAT

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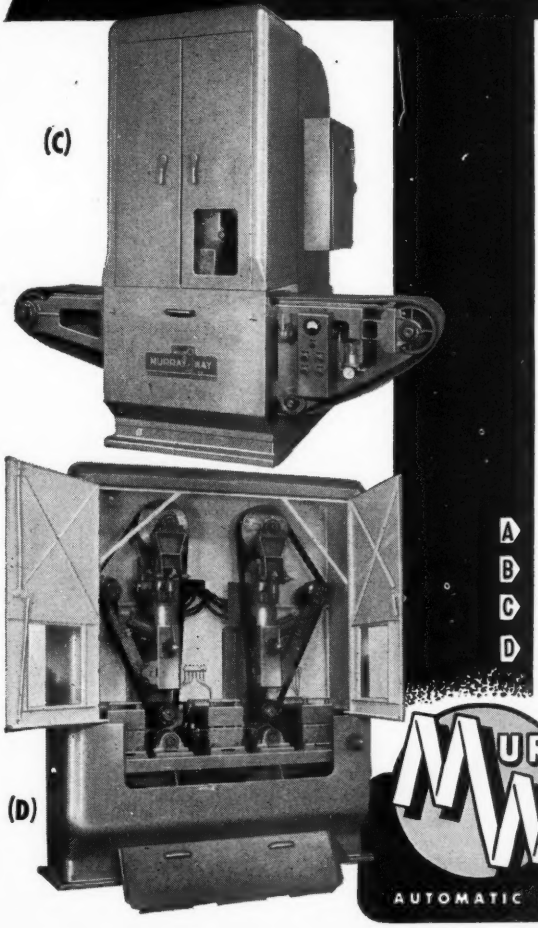

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Murray-Way, "engineered-to-the-job", Micro-Polish equipment is now being used the country over in every type of application, on every conceivable kind of material.

Micro-Polish is an amazingly versatile and consistently successful automatic polishing method useful on any job from the prepolishing of low grade steel sheet, to meet high quality job specifications, to the production sharpening and polishing of pruning tools.

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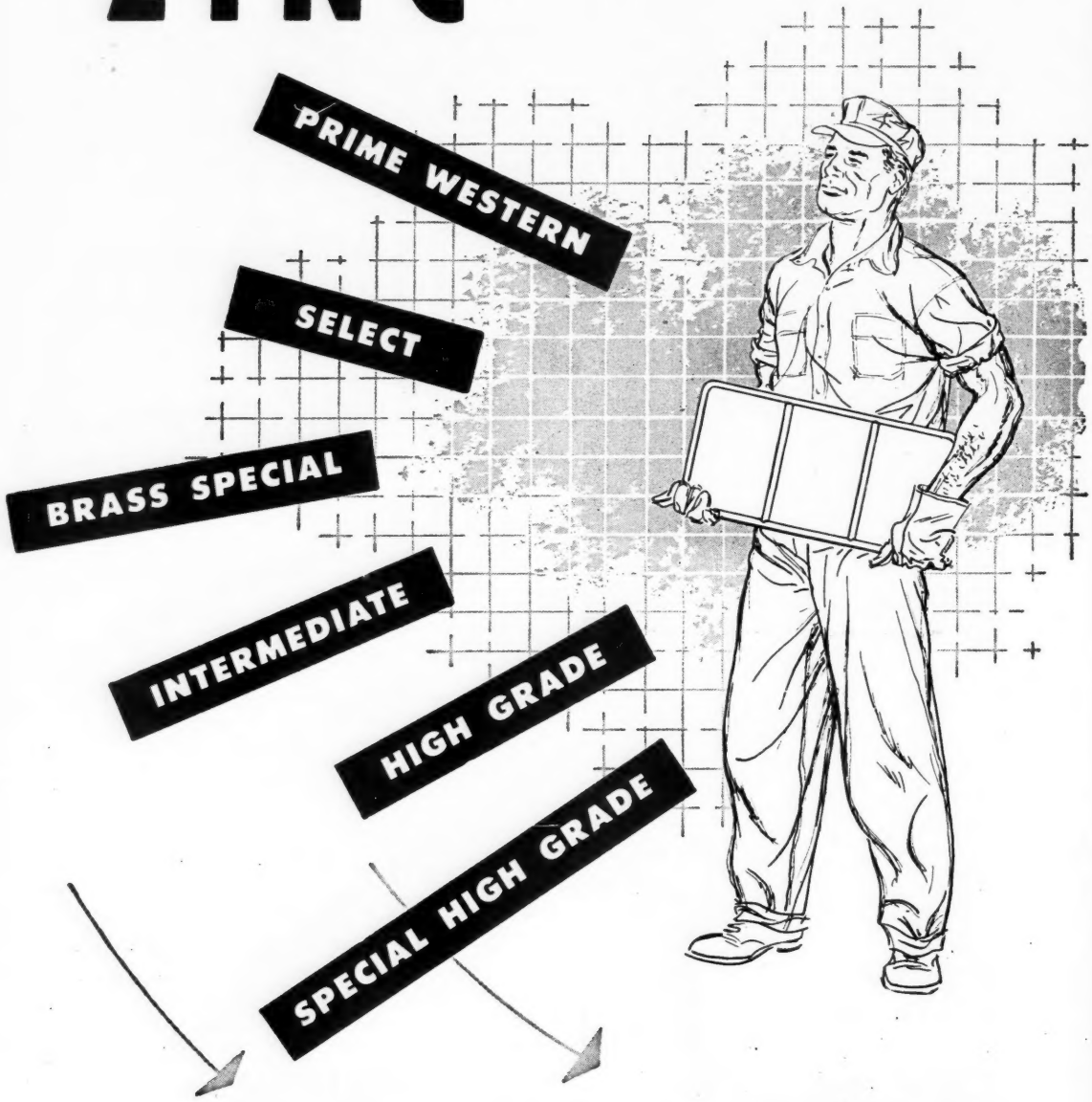


AMERICAN ZINC SALES COMPANY

Distributors for

AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

The Metal Market

A Story of Transformation

In at 2½ inches and out at 0.400 inches. That is the beginning of transformation from brass bars to sheet and strip at Chase Brass & Copper Co., subsidiary of Kennecott Copper Corp., Waterbury, Conn. Successive passes through this 2-high breakdown mill and one intermediate anneal are required for this rolling operation. The rolls operate at 600 rpm with bars passing through at 110 feet per minute. The mill represents an investment of more than half-a-million dollars

Although manufacturers can now raise their prices to the extent of metal cost hikes, a good bet is that many will absorb part of the costs because of competitive reasons

OFFICIAL GUN was sounded by OPS last week for manufacturers to raise their prices, but many of them are still at the starting line. It's a good bet a lot of them won't budge for some time to come.

For fabricators, particularly those whose products are for civilian consumption, raising prices at this time will be risking alienation of business. The boosts may come eventually, but not until some of the existing business enigmas are explained and industry becomes more optimistic about the future.

Daisy Chain—Because of the complicated chain reaction prices must go through from mill to final processor, full effects of the price pass-through won't be felt for at least a month. But already some manufacturers in first stages of fabrication have decided to absorb part or all of the increased costs of steel, copper and aluminum. The extent depends on what line they're in. (For more on the price order, see p. 63.)

After the supplier closest to the mill makes adjustments, he must notify his customer just how much he's charging. If the new price is below the old ceiling, no further adjustment down the line is allowed. Paperwork involved in some of these transactions could outweigh the product itself.

Worry, Worry—To further furrow the foreheads of manufacturers is the specter of wage demands that haven't hit them yet. Reports on defense spending having peaked don't help their disposition either. Everyone seems to be wary of pitfalls. Some sort of a shakeout is due sometime, they reason, and they want a solid base when that time comes.

The air of caution prevails among metal buyers too. Both foreign and domestic copper is snapped up as it comes on the market, but consensus is that the pace can't continue after October. Aluminum volume is brisk, partially because of shortage talk due to shutdowns in the Northwest. Zinc and lead markets can best be described as steady. Lead offerings to GSA for permanent or civilian stockpiling, the intermediate reserve of lead in the latter cache is rapidly nearing its 30,000 ton limit.

Labor Troubles in Copper

Labor problems still confront two domestic copper producers even after the 8-cent key to settlement had been found, and it seemed just a matter of time before all came into the fold. But at Calumet & Hecla's Houghton, Mich., mines, some 2000 CIO steelworkers struck last week, and boldly declared they will accept nothing less than a 25-cent increase. The union says its terms could be met easily by the company by any of three simple alternatives—digging into capital surplus or subsidy payments or by merely raising prices.

Power Lack Plagues Northwest

Bonneville Power Administration last week cut off approximately 300,000 kilowatts of interruptible power supply from hydro plants because of reduced stream flow in the Columbia river. Washington experts predict power shortages in the Northwest this year will cause loss of about 59,500 tons of aluminum. Last year only 2250 tons went by the boards from this cause.

At Spokane, two of eight potlines at Kaiser's aluminum reduction plant are out of operation, causing daily production loss of 100 tons. At Alcoa's new Wenatchee, Wash., plant, one potline is shut down, leaving one in operation.

Decontrol in Aluminum

Aluminum wire and cable will be the first to see decontrol, according to NPA. Order M-22 on distribution and use of aluminum scrap is now under active consideration, even though flow of scrap has lagged since prices went up on pig. Aluminum producers are doing their darndest to keep the government from stockpiling the metal in the fourth quarter. Their latest argument is that "in process" metal would be a more flexible stockpile than that in warehouses. Another recommendation to the government by the industry is to buy from Alcan the maximum amount it has available to make up for expected losses here and bring total supply to at least 365,500 tons for the fourth quarter. Another international deal would have the U. S. figure some way to "obviate the necessity" of repaying aluminum loaned by the U. K.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 14.00c; brass special 14.25c; intermediate 14.50c, East St. Louis; high grade 15.35c, delivered.

Lead: Common 15.80c; chemical 15.90c; corroding 15.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.00c, pigs 19.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 39.00c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 39.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $187-$190 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.00 del; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 83.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18%, 55.08; phosphor-bronze grade A, 5%, 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95%, 44.84; 90% 44.07; red brass 85%, 42.79; 80%, 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90%, 47.04; red brass, 85%, 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95%, 45.44; 90%, 44.67; red brass, 85%, 43.39; 80%, 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 32.795; 30,000 lb lots, 32.92; l.c.l., 33.42. Weatherproof, 100,000 lb, 33.60; 30,000 lb, 33.85; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 38.75; l.c.l., 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Aug. 4, 1952.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	31.6	...	...
0.135-0.096	12-48	32.1	...	...
0.095-0.077	12-48	32.8	30.6	34.9
0.076-0.061	12-48	33.4	30.8	35.1
0.060-0.048	12-48	33.7	31.0	35.4
0.047-0.038	12-48	34.1	31.3	35.7
0.037-0.030	12-48	34.5	31.7	36.3
0.029-0.024	12-48	35.1	32.0	36.8
0.023-0.019	12-36	35.7	32.7	37.5
0.018-0.017	12-36	36.4	33.3	38.4
0.016-0.015	12-36	37.3	34.0	39.5
0.014	12-24	38.3	35.0	40.8
0.013-0.012	12-24	39.3	35.7	41.7
0.011	12-24	40.3	36.8	43.3
0.010-0.0095	12-24	41.4	37.9	44.8
0.009-0.0085	12-24	42.6	39.1	46.6
0.008-0.0075	12-24	44.0	40.3	48.4
0.007	12-18	45.5	41.7	50.6
0.006	12-18	47.0	43.1	55.4

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R317-T4 17S-T4	R-317-T4	——Hexagonal—— 17S-T4
0.125	54.6	....	....
0.156-0.0188	46.2	....	....
0.219-0.313	43.6	....	....
0.375	42.0	48.3	50.4
0.406	42.0	....	....
0.438	42.0	48.3	50.4
0.469	42.0	....	....
0.500	42.0	48.3	50.4
0.531	42.0	....	....
0.563	42.0	....	47.3
0.594	42.0	....	....
0.625	42.0	45.7	47.3
0.688	42.0	....	47.3
0.750-1.000	41.0	43.1	44.6
1.063	41.0	....	43.1
1.125-1.500	39.4	41.5	43.1
1.563	38.9	....	....
1.625	38.3	....	41.5
1.688-2.000	38.3	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $21.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $21.00 per cwt. Traps and bends: List prices plus 50%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 21.25c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 22.50c; over 12-in., 22.50-23.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

DAILY PRICE RECORD

1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Sept. 2-9	24.50	15.80	14.00	121.50	20.00	39.00	56.50	83.25
Aug. 12-30	24.50	15.80	14.00	121.50	20.00	39.00	56.50	83.25
Aug. Avg.	24.50	15.80	14.067	121.50	19.923	39.00	56.50	83.25
July Avg.	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.885
June Avg.	24.50	15.06	15.74	121.50	19.00	39.00	56.50	82.75
May Avg.	24.50	15.519	19.50	121.50	19.00	42.077	56.50	85.356
Apr. Avg.	24.50	18.723	19.50	121.50	19.00	49.077	56.50	88.00
Mar. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Feb. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Jan. Avg.	24.50	18.80	19.50	109.404	19.00	50.00	56.50	88.00
Sept. 1951 Avg.	24.50	16.80	17.50	103.00	19.00	42.00	56.50	90.16
Sept. 1947 Avg.	21.50	14.825	10.50	80.00	15.00	33.00	35.00	....

NOTE: Copper: Electrolytic, del. Conn. Valley, Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 12.50-12.75; battery plates 7.00-7.50; linotype and stereotype 13.50-14.00; electrotype 12.00-12.50; mixed babbitt 14.50-14.75.

Zinc: Old zinc, 6.00-6.50; new die cast scrap, 6.00-6.50; old die cast scrap, 4.75-5.00.

Steel Bars . . .

Bar Prices, Page 175

Philadelphia — Hot-rolled bars are coming through in better volume to cold finishers. The latter are booking orders for second quarter next year having written off first quarter as lost. Government subcontracting activity is more pronounced. Textile and heavy industry generally are picking up.

New York—Magic numbers are the only thing that'll get you hot carbon bars this year. High priority defense work has gained enough momentum to elbow heavily into schedules. Producers want to clear up military arrearages well ahead of target date too. First quarter books haven't opened yet on hot-rolled carbon or alloy bars. Large bar rounds are still in comparatively better supply. Heavy deferrals of deliveries on military orders aren't foreseen.

Boston—An all-out effort to clear books of high rated and directive tonnage during fourth quarter may fall short in the case of carbon steel bars, notably larger sizes and forging stock. In any event, tonnage available to non-defense users will be small during the remainder of this year and well into first quarter.

Cleveland — Barmakers see little prospect for any openings in fourth quarter schedules. With high-rated defense requirements heavy a large portion of fourth quarter bookings will be carried over into first quarter next year. Consequently, there will be only limited new tonnage available in first quarter on regular account.

Chicago — Bar sellers are under heavy pressure from consumers with military set-asides high. Inland Steel estimates that only one-third of its total bar tonnage is open for civilian consumers over the remainder of the year.

Sheets, Strip . . .

Sheet and Strip Prices, Page 175 & 176

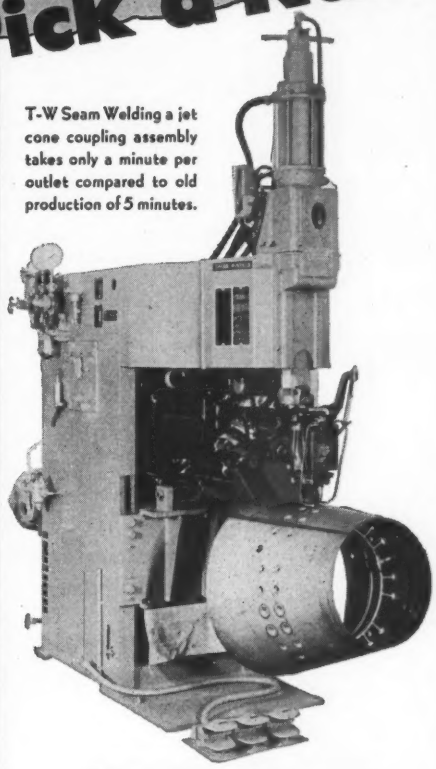
Boston—Demand for high carbon narrow cold-rolled strip lacks snap. There are openings next quarter, including annealed stock. Prices are also confused due to lack of uniformity, multiple basing point selling and slitting deals. One mill has not increased low carbon strip, New Haven, and the spread ranges up to $9 per ton and more at that basing point. Increasing spread between sheets and cold strip following the recent post-strike price revisions is resulting in more sheet slitting.

Commodity rate on hot-rolled steel bands in coils, $4.105 gross ton, Phillipsdale, R. I., to Wallingford, Conn., is being established. Rate has been $7.62 on minimum 20-ton shipments and $4.93 on 40-ton lots.

Pittsburgh—Sheet business is better than had been anticipated. Chief reason is an upsurge in inquiries from automotive and household appliance industries.

New York—Inquiries are light, considering the need for immediate delivery in some quarters. Most producers' first quarter order books won't open for about a month. Nibbles for space in fourth quarter are

Cessna Bendix Pratt Packa
Budd **Pick a Name** Gibson
Sikorsky General Ele
A. V. Roe Lewyt
McDonnell Twin Coach
American Northrop
MacDonald Oldsmobile
Douglas Beech
North Amer Western Ele
Canadair Allison
Ryan Aero Westinghou
Goodyear Hughes
Glen Martin Consolidat
Boeing Harrison
Solar Aircr United Airc
ChanceVou Heintz



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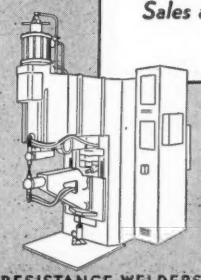

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INQUIRIES PROMPTLY ANSWERED

made half apologetically. One supplier is taking rated orders for first quarter on carbon sheets and strip. Cold-rolled sheets are cleaned out for fourth quarter. Some strip may be available for December delivery.

Philadelphia—Auto body demand is stimulating sheet and strip order volume. Radio and television business seems to be picking up. This pattern doesn't seem to be shared by refrigerator and stovemakers. Galvanized sheets are scarce, galvanizers still trying to catch up with back orders. Little encouragment is given for delivery this year on new tickets for hot-rolled, enameling and silicon sheets.

Cleveland—With order books loaded through fourth quarter, sheetmakers expect to be under pressure well into the first three months of next year at least. They anticipate few openings in schedules between now and end of the year though clearing away of some high-rated defense business now on books may ease supply prospects for the regular trade much sooner than now indicated. Generally, the pressure for sheets is not as severe as that for bars, plates and shapes.

Tubular Goods . . .

Tubular Goods Prices, Page 179

Boston—Headway is being made in reducing carryover in butt weld pipe. July tonnage is being shipped this month by mills and some new volume in this class of pipe may be open in fourth quarter. Shipments against old and third quarter orders and allotments will take up fourth quarter capacity for seamless to distributors.

Plates . . .

Plate Prices, Page 175

New York—A ray of hope is seen for half-starved plate users without high military ratings. It comes from an increasing number of requests by defense contractors for mills to defer deliveries because of component shortages. One big area fabricator will cut back October plate consumption by several thousand tons because it can't get components.

New York—Lukens Steel Co., Coatesville, Pa., has started commercial production of copper-clad steel plate, an addition to its line of corrosion-resistant plate first rolled by Lukens in 1930. Cladding copper percentages of 10, 15 or 20 per cent of total thickness will be produced in plate sizes 120-in. wide, 380-in. long and 3/16 to 1¼-in. thick. Copper clad plate will be rolled for flanged or flanged and dished heads.

Boston—For petroleum storage, large capacity tank work is more active. More than a dozen fuel distributors are expanding facilities in New England, White Fuel Co., Inc., Boston, being the latest to obtain a certificate of necessity, $950,000 for additional tanks.

Philadelphia—Help for hard-pressed plate users may come when two district mills get idle facilities back in operation. At Coatesville, Pa. the 120-in. mill and a 112-in. unit were scheduled to resume operations Sept. 14. Next week should see the mill at Claymont, Del., back in production. Flanging department at Claymont is operating on circles, but may be forced down several days until the plate mill resumes.

Pittsburgh—Plate users are exerting terrific pressure for delivery. Fabricators are anxious to get jobs finished before bad weather sets in. Currently non-military users are getting material if they placed orders in second quarter. Within the next two or three weeks books will be opened for first quarter.

Structural Shapes . . .

Structural Shape Prices, Page 175

Pittsburgh—While new demand for structurals isn't heavy, it is only because fabricators know the futility of placing new orders in existing circumstances. Structural shapes for railroad cars are an example. Two shops are down, partially, awaiting delivery on second quarter tonnage.

Boston—Bridge tonnage accounts for the bulk of structural volume. Bids close Sept. 24 on the Fore river span, Portland, Me., 4345 tons, and contracts have been awarded for 10,800 tons, three bridge superstructures, Massachusetts. Hunt's Falls project, Lowell, Mass., went to West End Iron Works, Cambridge, at 26.50c per pound in place, 1200 tons.

Philadelphia—A paradox in structural shapes is that while backlogs are heavy new inquiries are limited and awards minor. Most nibbles are for small highway projects, schools, churches and general industry. Mill shipments are coming through better.

Cleveland—Fabricators anticipate increasing competition over coming months with comparatively limited new work in the offing except for schools and similar projects. Tight supply conditions in structurals may be a factor in the dullness but with fabricating shops anticipating substantial improvement in stocks by first quarter they are beginning to become apprehensive of severe competition come next spring.

Pig Iron . . .

Pig Iron Prices, Page 174

Chicago—Merchant pig iron prices have been advanced in line with the recent raising of the ceiling by OPS.

Republic Steel Corp.'s blast furnace at its South Chicago works went down for relining Sept. 7 and will be out of blast approximately 60 days. In addition to relining, the furnace hearth will be enlarged to 28 feet and other engineering improvements made to raise the stack's capacity from 1275 to approximately 1350 tons daily.

Boston—Fourth quarter foundry and malleable pig iron prices will be established by Mystic furnace, Everett, Mass. about Sept. 25. This producer will continue to price iron on the basis of costs for the three months previous to quarterly announcement.

New York—Except for a few of the larger consumers, pig iron shipments are not being deferred because of the 30-day inventory limit. While most furnaces advanced prices $2.50 per

ton as of July 26, one southern producer made the new price operative Sept. 4. Melt in most cases is unchanged and gray iron foundries could handle more volume. Competitive factors play a part in increasing castings prices in line with pig iron.

Buffalo—Merchant pig iron producers report demand equals output, but delay in arrival of sufficient railroad cars to handle shipments is creating a problem.

Philadelphia—A few kicks are being registered about higher pig iron costs, but no order cancellations are accompanying them. Iron supply remains tight in this district. Some is coming in from as far away as Texas.

Cleveland—Pig iron producers in this area have adjusted their prices upward $2.50 per ton on basic, No. 2 foundry, malleable and bessemer grades, retroactive to July 26. No resistance to the higher prices is indicated on the part of buyers though pressure for tonnage is not as strong as had been anticipated by some sellers.

Wire . . .

Wire Prices, Page 177

Cleveland—Wire mills in this area are under pressure for shipments and no noticeable easing over the remainder of the year is anticipated. This is somewhat contrary to reports from some other wire centers where certain sellers think they may be out actively looking for customers as early as November.

Scrap . . .

Scrap Prices, Page 182

Detroit—Brokers are unwilling to sell at less than ceiling until dealers show more apprehension than they now do. Blast furnace grades may be more susceptible to below-ceiling sales than other grades. Fear of ore shortage this winter is less evident. However, the entire market now is at ceiling. Even scattered cast sales at less-than-ceiling are not regarded as representative. Out-of-district mills are reluctant to go far afield for scrap.

Boston—Dealers are paying slightly higher prices for unprepared scrap and up to $21 for light iron with prices to consumers at ceiling except for machine shop and short shoveling turnings. These are $2 under ceiling. Demand for cast lags and prices are soft.

New York—Except for turnings, steel scrap prices are holding at ceiling. Shipments are active, some mills releasing against old orders while several have placed new tonnage. Cast grades are slow with prices on several grades below ceiling, although there is a firming tendency. Heavy breakable is $45 delivered, and cupola cast $47.

Buffalo—Despite sales at ceiling levels, cast scrap is having difficulty holding these levels with consumers seeking shipments on a delivered basis rather than f.o.b. shipping point. Steelmaking grades show strength with mill buying active at ceiling prices.

Philadelphia—Scrap market condi-

One man and a C-F Lifter . . .

One man and a C-F Lifter handle the sheet steel stock in and out of storage in this plant with ease, speed and economy. C-F Lifters can pick up, carry and unload more loads per hour using less man and crane time than any other method. Note how closely a C-F Lifter piles sheets—this results in great savings in storage space. Jaw adjustments for carrying different widths of sheets are made in a few seconds by the operator—an important feature when varying sizes of stock are used.

C-F Lifters are made in sizes to handle from 2 to 60 tons in standard and semi-special designs.

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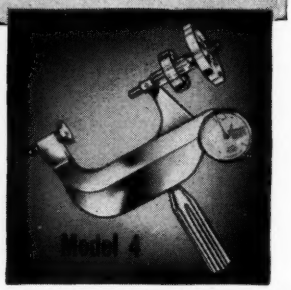
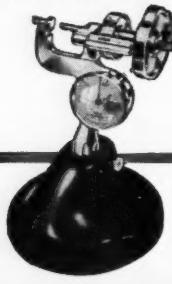
For testing rounds and flats, dies, odd-shaped pieces, etc., up to two inches in Rockwell A, B and C Scales. Weighs 2½ lbs.



For testing up to four inch capacity directly in Rockwell A, B and C Scales. Throat depth two inches. Weighs 3¼ lbs.



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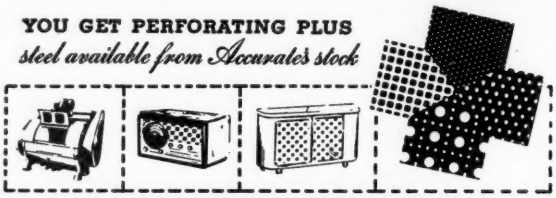

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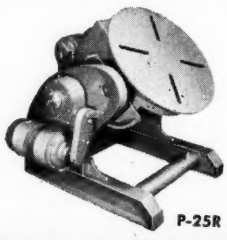

P-25R

REED ENGINEERING COMPANY
1005 W. FAIRVIEW . . . CARTHAGE, MO., U. S. A.
DESIGNERS AND MANUFACTURERS OF
MODERN METALWORKING MACHINES

tions for nonintegrated mills are better today than for a long time past. Supplies are coming in well, and the market is steady at ceilings on all products except No. 1 cupola cast and unstripped motor blocks.

Pittsburgh—Scrap market is dull. Major deliveries are those on books for some time. Mill inventories are high. There is definite evidence of a reluctance to buy. There is an undercurrent of weakness in the market, and a watchful waiting among big buyers is evident.

Cleveland — With stocks comfortable and material being generated in rising volume, the mills are increasingly squeamish in accepting scrap shipments. Emphasis on quality is noticeably rising, reflected in more numerous rejections. While consumption is heavy the mills for the moment at least, are not actively in the market. Prices on steelmaking grades, however, continue at ceiling in the absence of dealer urgency to dispose of stocks.

Birmingham—Firmer tone is noted in the scrap market with increases in cupola cast from $45 to $46 and in stove plate from $41 to $42 reported.

Los Angeles—Mill rejections have increased indicating plant stockpiles are substantial. Collections are higher and dealers' yards are well stocked.

San Francisco—No. 2 heavy melting scrap is off $3 a ton from its ceiling price to $31 a ton. Machine shop turnings also are down $3 a ton. The latter grade at $17 now is $8 below ceiling. Mills dropped their buying prices because of plentiful supplies. The decline in No. 2 heavy melting restores the price differential between that grade and No. 1 heavy melting which existed prior to establishment of OPS ceilings. No. 1 cupola cast remains firm at $46 a ton.

Seattle—Large buyers of scrap report supply conditions satisfactory. Receipts are heavy and despite unusually large consumption inventories are increasing to some extent. Foundries are finding cast supplies ample for their requirements. Cast iron scrap is being quoted under OPS ceiling in the $35 to $40 per ton range.

Iron Ore . . .

Iron Ore Prices, Page 181

Cleveland—Movement of iron ore from the head of the lakes is being pressed at record-breaking pace as vessel operators seek to recover some of the ground lost during the June-July stoppage of shipments because of the strike.

Shipments in the latest week of record, that ended Sept. 8, set an all-time high mark at 3,384,481 gross tons, exceeding by 48,448 tons the record set the preceding week. Expectations now are that September total shipments will top the August record movement of 14,367,627 tons.

Shipments in the 1952 season to date total only 41,284,129 tons, about 20,562,068 under the movement in the like period of the 1951 shipping season.

Washington — Ceiling iron ore prices last week were raised 75 cents per ton by the Office of Price Stabilization, retroactive on all deliveries on and after July 26. The new schedule, covered in CPR 169, prices Mesabi nonbessemer at $9.05 per gross ton, Mesabi bessemer, $9.20, Old Range nonbessemer, $9.30, Old Range bessemer, $9.45, and high phosphorus, $9.05, all delivered lower lake ports.

Cleveland—Iron ore shippers late last week began advising customers of an increase of 75 cents per ton in ceiling prices on ore permitted by OPS retroactive to July 26.

Semifinished Steel . . .

Semifinished Prices, Page 175

Chicago—First of Inland Steel Co.'s new openhearths was placed in operation last week, several days ahead of the scheduled date Sept. 15. This is a 250,000-ton furnace, and several others are under construction which will add 750,000 tons to Inland capacity by Nov. 15.

Warehouse . . .

Warehouse Prices, Page 181

Washington—Carbon steel hot and cold-rolled sheet and strip have been removed from the list of items temporarily frozen in warehouses by the National Production Authority. Also exempted from the freeze are imported and secondary steel products since these items, as a rule, do not meet military specifications.

Under current regulations warehouses must hold at least 50 per cent of their receipts of steel products for 15 days in order to fill top-rated orders for military, atomic energy and machine tool programs. The exemptions from the freeze, ordered last week, will permit the distributors to sell secondary and imported items as well as carbon steel sheets and strip to any customer with a priority.

Philadelphia—Warehouse operators are picking up odds and ends in an effort to replenish stocks. Complaints persist against the government regulation freezing 50 per cent of warehouse intake for 15 days, though NPA exempted hot and cold-rolled sheets and strip, seconds and imported steel from the regulation last week.

Pittsburgh — Warehouses are getting all the steel they are supposed to get, but not all they would like to have.

Cleveland — Steel distributors in this area are receiving tonnage from the mills in satisfactory volume. As a result stocks are in better shape than they have been for some weeks back and indications are by yearend will be in good balance in most products. Bars and heavy plates may be exceptions in this respect. Expectations are shape inventories will be substantial by first quarter of next year.

Chicago—Heavy pressure continues on the warehouses for those products that have been in tight supply for months past. These items include large rounds, seamless tubing and heavy plates. Inventories are not being built up to any extent.

Seattle — Warehouse demand has slackened but it is not clear whether this is due to business decline, end of the Alaska season, or because of steel shortages. Higher prices are not blamed for the decline in volume.

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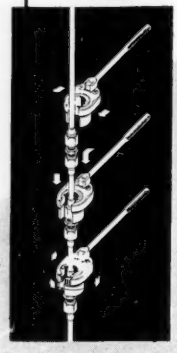

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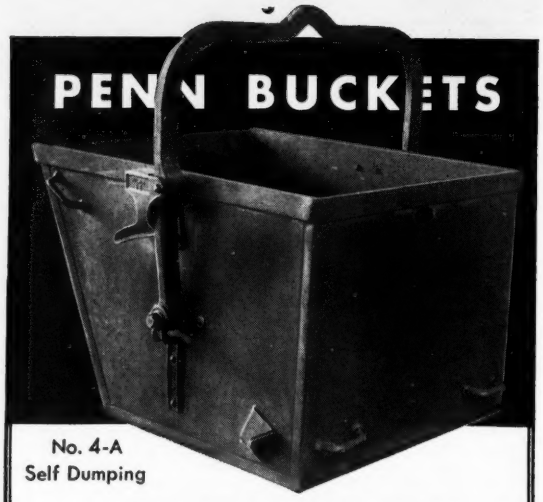

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STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

6390 tons, Elmhurst General Hospital, Queens, New York, to Schacht Steel Construction Co., through Deopt Construction Co., general contractor.

2468 tons, state highway, Broome county, N. Y., to Bethlehem Steel Co.

2143 tons, state thruway bridge work, Onondago county, New York, to D. W. Winkleman Co.

2070 tons, state thruway bridge work, Albany county, New York, to D. A. Collins Co.

1800 tons, engine storage building and extension to building 17, Naval Air Station, Quonset Point, R. I., to Bethlehem Steel Co., Bethlehem, Pa., through Jefferson Construction Co., Cambridge, Mass.

1230 tons, Market Street subway extension, Philadelphia, to Bethlehem Steel Co.

1200 tons, bridge superstructure, Hunt's Falls, Lowell, Mass., to West End Iron Works, Cambridge, Mass.

1200 tons, physical educational center, Northeastern University, Boston, to Groisser & Shlager Co., Somerville, Mass., through John A. Volpe Construction Co., Malden, Mass., general contractor. Previously reported as going to Bethlehem Steel Co.

981 tons, Route 4 parkway, Union county, New Jersey, to American Bridge Co., Pittsburgh through J. F. Chapman & Son, general contractor.

877 tons, bridge work, Northampton county, Pennsylvania, to Lehigh Structural Steel Co., Allentown, Pa., through Berlanti Construction Co., Harrison, N. J.

820 tons, state thruway bridge work, Ontario county, New York, to Lane Construction Co.

818 tons, plant and offices, Breeze Corp. Inc., Union, N. J., to Bethlehem Contracting Co.

645 tons, state thruway bridge work, Madison and Oneida counties, New York, to Lane Construction Co.

575 tons, physics building, University of Virginia, Charlottesville, Pa., to Barber & Ross Inc., Washington, D. C., through Jeffress-Dyer Inc., Washington, general contractor.

400 tons, building, Morristown, N. J., to Robinson Iron & Steel Co.

350 tons, new process magnesia building, Watson, Calif., to H. E. Ferguson Co., from Johns Manville.

300 tons (estimated), gate hoists and appurtenances, Lookout Point dam, to Berger Engineering Co., Seattle, low $152,500 by U. S. Engineer, Portland, Oreg.

300 tons, rolling mill plant, Seidelhuber Steel Rolling Mill Corp., Seattle, to Leckenby Structural Steel Co., Seattle.

294 tons steel, state bridge work, project LOSP 52-2, Monroe county, New York, to Potter-Dewitt Co.

250 tons, plant, E. I. DuPont, Richmond, Va., to Bethlehem Fabricators.

232 tons, state highway bridge, Jefferson county, New York, to Bethlehem Steel Co., through Washburn Construction Corp. and McLean Grove, bidding jointly.

200 tons, plant building and craneway for Sahara Drawn Steel Co., Seattle, to Leckenby Structural Steel Co., Seattle.

137 tons, U. S. route 22, Northampton county, Pennsylvania, to C. W. Good Co.

100 tons, towers, static test facility for Boeing Aircraft Co., Seattle, to Leckenby Structural Steel Co., Seattle.

STRUCTURAL STEEL PENDING

6000 tons, transmission towers, foundation steel, etc.; bids to Bonneville Power Administration, Portland, Oreg., Sept. 17.

4345 tons, viaduct and Portland interchange, highway and railroad bridge, Fore river, Portland-South Portland, Me.; also 52,600 linear feet of steel H-beam piling; bids Sept. 24, State Highway Commission, Augusta, Me.

2000 tons, H-beam piling, Fore River bridge, Portland, Me.; bids Sept. 24, contract 2, Augusta, Me.

1000 tons, estimated, 23 intake gates, 20 assemblies, etc. Chief Joseph dam; Todd Shipyards Co., Houston, Texas, low $574,974, to U. S. Engineer, Seattle.

465 tons, WF beam bridge and approaches, St. Johnsbury, Vt., bids Sept. 19, Montpelier, Vt.

300 tons, building addition, Armstrong Cork Co., Lancaster, Pa., bids due Sept. 19.

250 tons, high school, Reading, Mass.; A. Cefalo & Sons Inc., Lynn, Mass., low on general contract.

REINFORCING BARS . . .

REINFORCING BARS PLACED

600 tons, superphosphate plant, Davison Chemical Co., Lakeland, Fla., to Dave Gordon Steel Products Inc., Tampa, Fla., through Consolidated Engineering Co., Baltimore. Project takes 1900 tons fabricated structural steel.

360 tons, additional buildings, Naval Air Station and U. S. Fleet Sonar School, Key West, Fla., to Connors Steel Co., Birmingham, through Fred Howland Inc., Miami, Fla., general contractor.

295 tons, engine storage building and extension to building 17, Naval Air Station, Quonset, R. I., to Joseph T. Ryerson & Son Inc., Cambridge, Mass.

270 tons, physical educational center, Northeastern University, Boston, to United States Steel Supply Co., Boston, through John A. Volpe Construction Co., Malden, Mass., general contractor.

265 tons, cold storage plant, Naval Supply Depot, Newport, R. I., to Bethlehem Steel Co., Bethlehem, Pa., through Theodore Loranger & Sons Inc., New Bedford, Mass., general contractor.

200 tons, physics building, University of Virginia, Charlottesville, Va., to Roanoke Engineering Sales Co., Roanoke, Va., through Jeffress-Dyer Inc., Washington, D. C., general contractor.

125 tons, Washington state Buckley state school, to Bethlehem Pacific Coast Steel Corp., Seattle; W. G. Clark & Sons, Seattle, general contractors.

100 tons, including structurals, miscellaneous buildings, Ft. Benning, Ga., to Ferro Fabricating Co., Atlanta, Ga., through J. A. Jones Construction Co., Atlanta, general contractor.

REINFORCING BARS PENDING

1315 tons, contracts 1 and 2, bridge, Fore river, Portland, Me.; bids Sept. 24, Augusta, Me.

905 tons, intake tower, penstock, bridge and spillway, Lucky Leak dam, near Boise, Idaho; bids Sept. 23, Corps of Engineers, Walla Walla, Wash.; also 575 tons, structural steel and 180 tons, miscellaneous metal.

105 tons, overpass, Daniel Webster highway, Franklin, N. H.; bids in at Concord, N. H.

100 tons, including miscellaneous steel, prestressed concrete span, Coos-Douglas counties, Oregon; bids to Bureau of Public Works, Portland, Oreg., Sept. 23.

PLATES . . .

PLATES PENDING

450 tons, 1 million-gallon standpipe, research center, Bedford, Mass.; bids to Corps of Engineers, Boston, Sept. 30.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Canadian National Railways, 102 road and switcher diesel locomotives; orders placed with Canadian Locomotive Co., Kingston, Ont.; General Motors Diesel Ltd., London, Ont.; Montreal Locomotive Works, Montreal, Que.; American Locomotive Co., New York.

Rock Island, 30 diesel-electric locomotives, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

LOCOMOTIVES PENDING

Alaska Railroad, three 1500 hp lead units, diesel-electric locomotives, also three 1500 hp booster units, 4-wheel trucks; bids to General Services Administration, Seattle, Sept. 9.

RAILROAD CARS PLACED

Rock Island, 200 extra long gondolas, to Pullman Standard Car Mfg. Co., Chicago.

Solvay Process Division, Allied Chemical & Dye Corp., fifty 70-ton tank cars to American Car & Foundry Co., Milton, Pa., plant; cars will have capacity of 110,000 pounds of chlorine.

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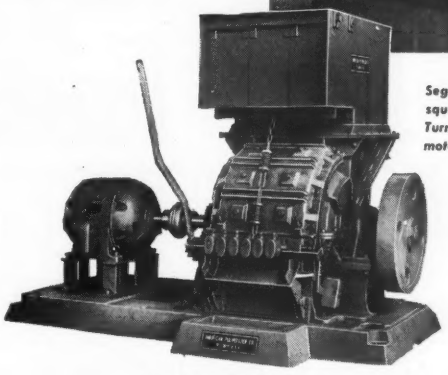

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Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

National Roll & Foundry Expands

A new car type heat treating furnace is being installed by Rust Furnace Co., Pittsburgh, at the plant of National Roll & Foundry Co., Avonmore, Pa. The new unit will increase the company's heat treating capacity for production of rolls and commercial castings, as well as tank armor castings.

Western Spring Boosts Capacity

Western Spring Co., Bronx, N. Y., is installing a 90-ton gang punch, a 60-ton consolidated gear press and other heavy metalworking machinery. This expansion program is expected to achieve a 100 per cent increase in production. The company manufactures a wide variety of metal sleeping equipment, such as folding cots, beds and couches.

Kaiser Awards Mill Contract

Loewy Rolling Mill Division, Hydropress Inc., New York, was awarded a contract by Kaiser Aluminum & Chemical Corp., Oakland, Calif., for a high-speed four-high rolling mill installation for the manufacture of aluminum foil.

Hollingshead Reorganizes Divisions

R. M. Hollingshead Corp., Camden, N. J., reclassified its Industrial-Aviation Division to Industrial Division and merged its Government Sales Division with its Industrial Sales Division. Donald O. Severson is vice president in charge of sales.

Wire Maker Adopts New Trade Name

Nepconol is the new trade name selected by National Electric Products Corp., Pittsburgh, for its expanded line of thermoplastic insulated wires and cables, including building wires. It replaces the former trade name of Ne'on which had been used to designate building type wires.

Wiedemann Machine Appoints Agent

Wiedemann Machine Co., Philadelphia, appointed Four States Machinery Co., Chicago, as representative for its line of turret punch presses for short run sheet metal piercing.

Tool Plant Moved to Michigan

Arthur Colton Co., a division of Snyder Tool & Engineering Co., Detroit, established a plant in Mancelona, Mich., to replace the plant previously occupied in Paducah, Ky. The plant will manufacture and service punches and dies. New automatic electric furnaces and ovens are being added to expand the heat treating section, and new metal cutting equipment is being installed.

Bonnot Co. Buys Hydromotor Inc.

Hydromotors—trade name for reciprocating rotary actuators — are now the products of a new division of Bonnot Co., Canton, O., as a result of the recent purchase of Hydromotor Inc. Bonnot transferred Hydromotor operations from Orrville, O., to a new plant in Canton.

Hooker Opens Chicago Sales Office

Hooker Electrochemical Co., Niagara Falls, N. Y., is opening a sales office at 1 N. La Salle St., Chicago. Charles Y. Cain is Chicago district sales manager; Donald McKechnie, Chicago office manager. The company is constructing a $12 million caustic soda chlorine plant at Montague, Mich.

Union Carbide Clarifies Position

Union Carbide & Carbon Corp., New York, will not be the operator of the new diffusion plant to be built near Portsmouth, O. Misunderstanding about the operator, not yet named by AEC, has been caused by the general assumption that Union Carbide would operate the new plant as it has all the other gaseous diffusion units at Oak Ridge, Tenn., and Paducah, Ky. Union Carbide will furnish key services, including process design, engineering and assistance in procurement of special equipment; provision of operating data for the prospective operating contractors; technical consultation during construction and start-up of the plant. Decision that Union Carbide would not operate the Portsmouth plant arises from AEC's desire to get more industrial companies participating in its program.

Westinghouse Gets Equipment Order

Westinghouse Electric Corp., Pittsburgh, received an order of more than $500,000 from Youngstown Sheet & Tube Co. at Indiana Harbor, Ind. Westinghouse will supply all electrical equipment for a continuous pickling line and for two shearing lines. Wean Engineering Co., Warren, O., will supply the continuous pickling line; Aetna Standard Engineering Co., Pittsburgh, the two shearing lines.

Two Bus Builders Plan Joint Project

Twin Coach Co., Kent, O., and Flxible Co., Loudonville, O., developed a co-operative manufacturing program designed to speed deliveries, cut production costs and assure a more uniform production schedule. Under the plan, each company makes constantly available to the other certain portions of its manufacturing capacity. The potential production of each company is increased sub-

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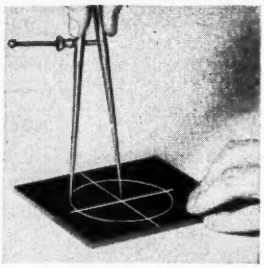

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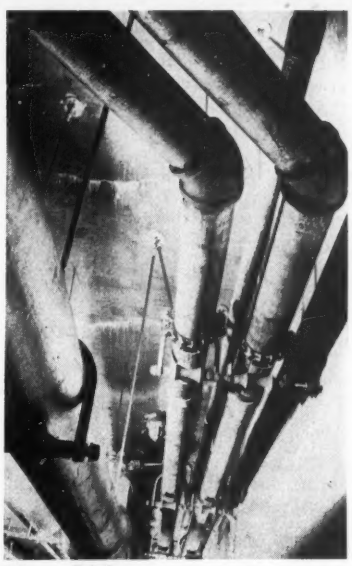

Pipe Rider

The mechanic at the bottom of the picture is riding the water pipes of the new Southerly sewage disposal plant in Cleveland. About 3000 feet of wrought iron pipe, made by the A. M. Byers Co., Pittsburgh, was specified for the $14.5-million sewage plant

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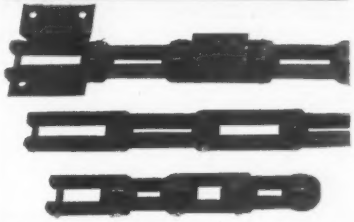

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stantially without additional capital investment for new equipment or the employment of additional workers.

Milford Rivet Buys West Coast Firm

Milford Rivet & Machine Co., Milford, Conn., manufacturer of tubular and split rivets, cold-headed fasteners, and rivet-setting machines, purchased Pacific Rivet & Machine Co., Alhambra, Calif. This brings to five the number of plants owned and operated by Milford Rivet. Operating as the Pacific Division, the plant will manufacture tubular rivets, cold-headed specialties and rivet-setting machines.

Babcock & Wilcox Moves Branch

Cleveland district sales office of Tubular Products Division, Babcock & Wilcox Co., Beaver Falls, Pa., moved into larger facilities at 629 Euclid Ave. James A. Cook is district sales manager while Ray E. Fleeson is in charge of the Cleveland office.

Brooks Oil Organizes Export Agency

Brooks Oil International Co. was formed to market products of Brooks Oil Co. in countries outside the Western Hemisphere. Alfred W. Ward is chairman of the board; Fred H. McCurdy, president. Executive offices are at 3304 E. 87th St., Cleveland; executive sales offices, 934 Ridge Ave., Pittsburgh. Brooks Oil

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specializes in the manufacture of lead-based industrial lubricants which are used in the steel, aluminum, railroad, coal mining and other industries.

Janco Corp. Builds Plant Addition

Janco Corp., Burbank, Calif., constructed an addition to its plant at 3111 Winona Ave., that city. The company manufactures electrical bonding jumpers, heaters, switches and resistors.

Copes-Vulcan Names Representative

Copes-Vulcan Division, Continental Foundry & Machine Co., Erie, Pa., appointed Carl Grimes & Co., Des Moines, Iowa, as representatives for its boiler feed control, water alarms, pressure reducing stations and desuperheaters.

Magnus Division Gets Distributorship

Marine & Power Plant Service Division, Magnus Chemical Co. Inc., Garwood, N. J., was appointed by Long Life New York as distributor of its product, a commutator and slip ring protector. Long-Life is a paste containing degummed castor oil, refined oils and tallows, and copper dust in colloidal suspension.

Davies Supply Moves Shop

Davies Supply & Mfg. Co., supplier of industrial plating and polishing equipment and materials, moved into new quarters at 4160 Meramec St., St. Louis 16. The enlarged shop space will permit the expansion of the firm's present production of plating racks and tanks.

Denison Engineering Opens Branch

Denison Engineering Co., Columbus, O., manufacturer of oil hydraulic equipment, opened a branch office at 565 N. Prairie St., Hawthorne, Calif. William D. Peters is manager.

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255 TON, TOLEDO #96-D DOUBLE CRANK, STRAIGHT SIDE, 6" stroke, 30" shut height, 51 x 87" bed area.
125 TON, TOLEDO #S-56 TWIN TYPE O.B.I. PRESSES ON S.S. BASE, 3" stroke, 25 x 25" bed area, 12½" shut height.
88 TON, TOLEDO #92½ DOUBLE CRANK, GAP FRAME, 8" stroke, 34 x 66" bed area, 20" shut height.

88 TON, BLISS #4D DOUBLE CRANK, GAP FRAME, 2¼" stroke, 38 x 53½" bed area, 9¼" shut height.
87 TON, BLISS #4½ STRAIGHT SIDE, 4½" stroke, 21 x 27 bed area, 14½" shut height.
75 TON, WELLS DOUBLE CRANK GAP FRAME, 2" stroke, 20 x 80" bed area, 11⅛" shut height.
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Experienced as works manager, production superintendent and sales engineer of foundry producing heat resistant and stainless castings; also, as chief metallurgist of tractor works. Desires position with progressive organization. Write Box 567, STEEL, Penton Bldg., Cleveland 13, Ohio.

METALLURGIST—AGE 42
21 years' experience in production, rolling and processing of plain carbon steels including plate, sheet, tin-plate, strip and merchant mill products. Experienced also in customer contacts and complaints. 12 years as Chief Metallurgist and Inspector. Location not important. Available immediately. Write Box 564, STEEL, Penton Bldg., Cleveland 13, Ohio.

PLANT MANAGER: M.I.T. GRADUATE WITH 25 years' experience in Plant Management, including Production planning, machine and plant loading, Material and tool control, quality control, purchasing, incentives, standard costs, variable budgets, overhead analysis and break-even charts, job evaluation, supervisory responsibility chart and labor relations. Capable administrator with excellent record. Write Box 559, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Applicants should have a Mechanical Engineering degree or its equivalent, and at least five years experience in designing tools for steel fabricating operations. Ability to work with other people and with a minimum of supervision essential.

This is a permanent position with a 75 year old nationally known manufacturer of essential equipment for public utilities, industries, transportation and government procurement agencies. Plant is expanding to provide additional facilities for manufacturing present products as well as those now in the development stage. Send resume of background, together with salary requirements, to Personnel Manager

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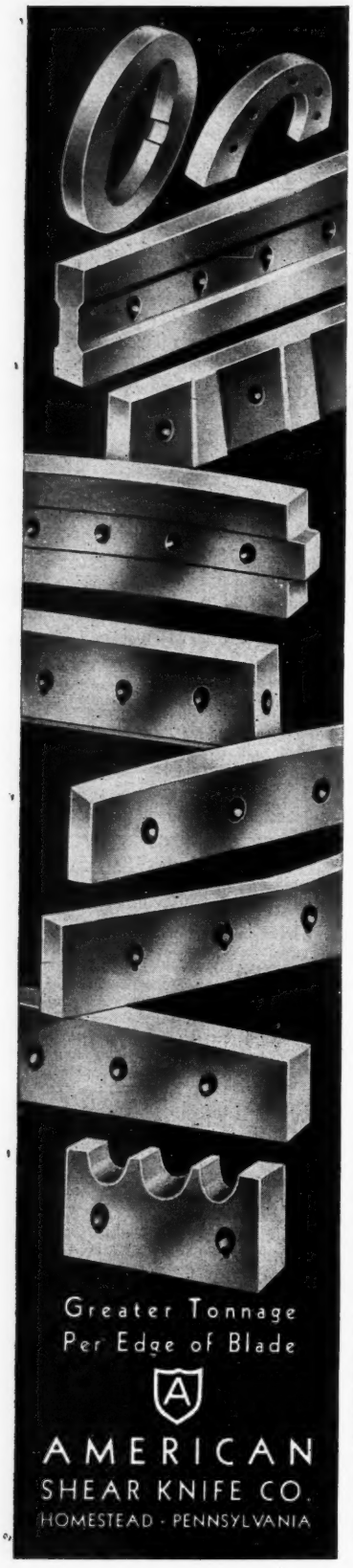
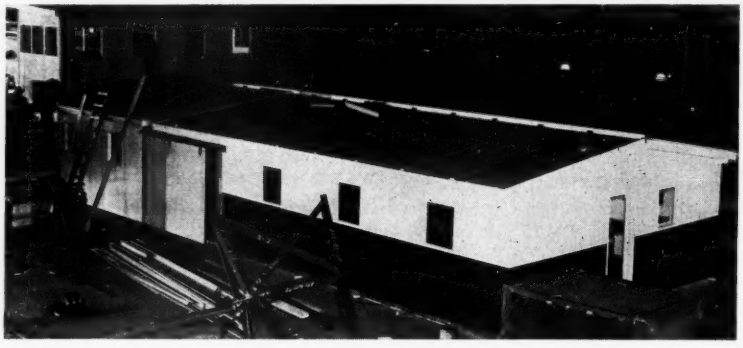


Skookum Dredges in Alaska

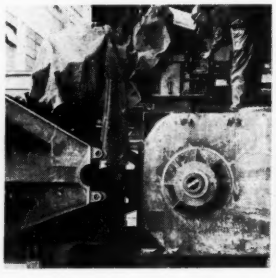
WHEN THE U. S. Bureau of Reclamation decided to build a power project on Lake Eklutna, 45 miles inland from Anchorage, Alaska, it had to have a special dredge to work in the ice-filled water and the stiff mud and clay.

Bethlehem Pacific Coast Steel Corp., San Francisco, made the dredge, called *Skookum,* for Ben C. Gerwick Inc. and Hydraulic Dredging Co., subcontracted to dredge a channel 80 feet below the surface.

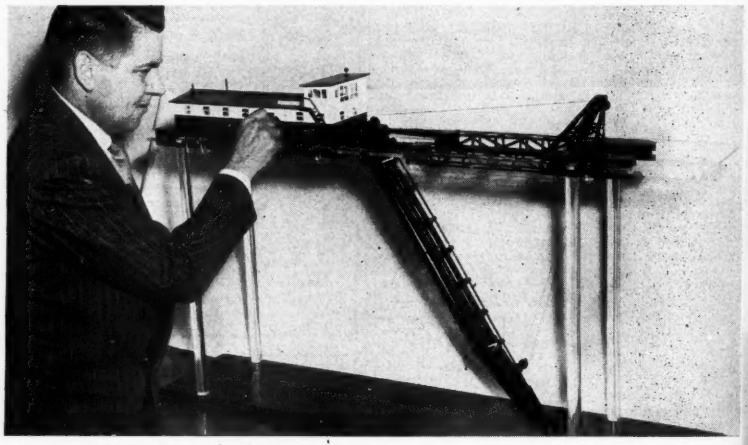
The project will supply Anchorage with an additional 30,000 kva.



The wooden deck house and pilot house sits on the *Skookum's* 74-foot 3¼-inch-long hull. It was built in five sections to facilitate shipping and assembling



Forward end of the hull, left, mounts the trunnion ladder brackets, which are incorporated into buoyancy tanks. Cutter drive assembly is mounted on foundation and bolted on top of trunnion section. Over-all view, right, shows 100-foot digging ladder in foreground. Total length of ladder and hull is 183 feet

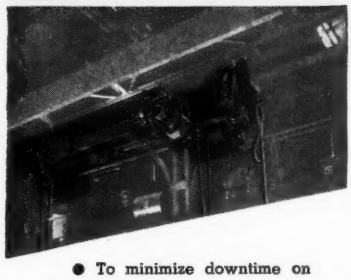


George P. Hurst, mining and dredging sales engineer for Bethlehem Pacific's Shipbuilding Division, examines scale model of dredge. A winch controls ladder depth

Modern Handling System

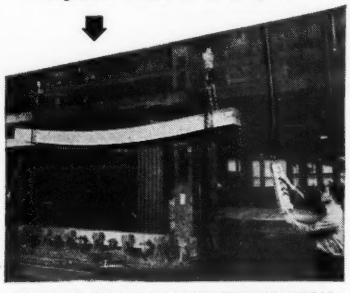
Reduces

MACHINE DOWNTIME



● To minimize downtime on a milling machine, finished flat stock had to be lifted out of the way quickly and easily. The customer, a prominent steel company, called in a Reading Engineer. A custom-built Hoist and Crane, with an extra long lift and push button control of *all* motions, was engineered and installed. Now handling of finished stock is no longer a "time-waster."

This method of engineering special handling systems, *at no extra engineering cost,* is standard practice with Reading. For full details on how you can use it to reduce handling costs and modernize operations, call in a Reading Engineer. There is no obligation.



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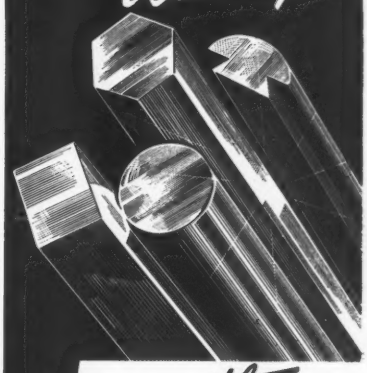

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Pangborn Solves these Problems with this Modern Equipment

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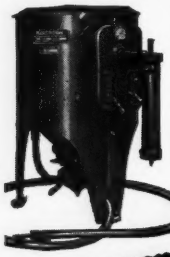
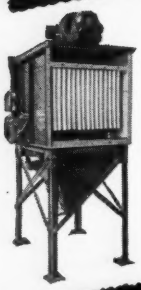
Blast Cleaning Cabinet cleans rust, grime, dirt, paint, etc., from metal parts. Produces a smooth surface on pieces up to 60" x 36". Models from $319.00 and up.



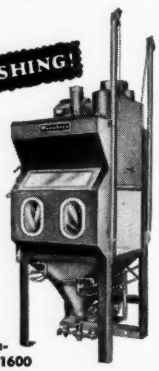
Blast Cleaning Machine removes rust, dirt, scale, etc., is ideal for maintenance work. Cleans large objects such as bridges, tanks, etc., before painting. Six sizes, portable or stationary from $170.00 and up.

DUST COLLECTING!



Unit Dust Collector stops dust at source, minimizes machine wear and tear, reduces housekeeping and maintenance costs. Solves many grinding and polishing nuisances. Models from $286.00 and up.

PRECISION FINISHING!



Hydro-Finish Cabinet uses liquid blast to polish, clean and finish molds, dies, etc. Removes scale, discoloration with minimum hand work. Holds tolerances to .0001". Models from $1410.00 and up.

Write for details on these machines to: Pangborn Corp., 1600 Pangborn Blvd., Hagerstown, Md.

Pangborn

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control Equipment

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